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3924 MEADE ST.
DENVER, COLORADO

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SUPPLEMENTAL DATA TO PHOTOFACT PHOTOFACT FOLDER 5 IN SET 235

Several new models and chassis have been added to the group of models covered in Photofact Folder 5, Set 235. A list of all models and the chassis used in each is given below:

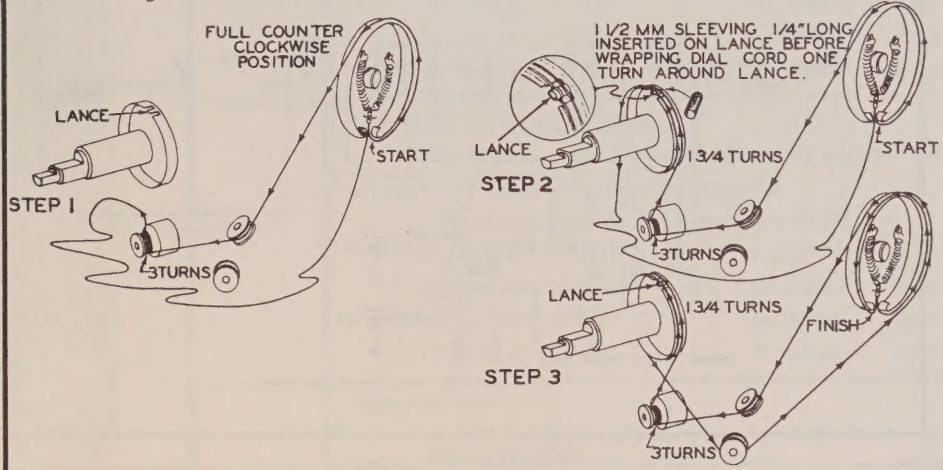
MODEL	CHASSIS	MODEL	CHASSIS
741F	120182-D	1001E	120208-D
757D	120182-D	1001G	120211-F
758F	120182-D	1002C	120206-D
759C	120195-D	1003E	120208-D
781A	120196-B	1003G	120211-F
781B	120196-B	1004C	120206-D
781E	120206-D	1005E	120208-D
784E	120197-B	1006C	120206-D
784G	120197-D	1007E	120208-D
784K	120197-B	1008C	120206-D
784M	120211-D	1009E	120208-D
785K	120195-D	1010C	120206-D
792D	120206-D	1011C	120208-D
793E	120211-F	1012D	120182-D
1000C	120206-D	1013C	120195-D

Chassis 120182-D may be considered as the basic chassis in this group. All the other chassis contain modifications in picture tubes, tuners, etc. Chassis 120195-D , 120196-B, 120197-B, -D are covered in Photofact Folder 5, Set 235, however a list of the differences in these chassis together with the added chassis is given below for reference purposes.

Ch.120195-D

Chassis 120195-D is identical to chassis 120182-D, except, a different VHF tuner (part #470712) and a UHF tuner (part #470729 or 470713) is used.

When the UHF tuner is used the pilot light (M4) is also included in the chassis. The schematic for these tuners is given on page 13 in Photofact Folder 5, Folder 235. The dial cord stringing for the UHF tuner is given below.



Ch. 120196-B

Chassis 120196-B is identical to chassis 120182-D, except, a 21MP4 picture tube is used. When the 21MP4 tube is used the 500MMF, high voltage filter capacitor (C81) and 100KΩ resistor (R88) are used.

A yoke socket and plug were also added. A drawing showing the connections to the socket and plug is given on the next page.

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EMERSON MODELS 741F, 757D, 758F (Ch.120182-D), 759C(Ch.120195-D), 781A, B (Ch.120196-B), 781E (Ch.120206-D), 784E(Ch.120197-B), 784G(Ch.120197-D), 784K(Ch. 120197-B), 784M (Ch.120211-D), 785K(Ch.120195-D), 792D(Ch.120206-D), 793E(Ch.120211-F), 1000C(Ch. 120206-D), 1001E(Ch.120208-D), 1001G(Ch.120211-F), 1002C(Ch. 120206-D), 1003E(Ch.120208-D), 1003G(Ch.120211-F), 1004C(Ch.120206-D), 1005E(Ch.120208-D), 1006C(Ch.120206-D), 1007E(Ch.120208-D), 1008C(Ch.120206-D), 1009E (Ch.120208-D), 1010C(Ch.120206-D), 1011C(Ch.120208-D), 1012D(Ch.120182-D), 1013C(Ch.120195-D)

PRODUCTION CHANGES
BULLETIN 103

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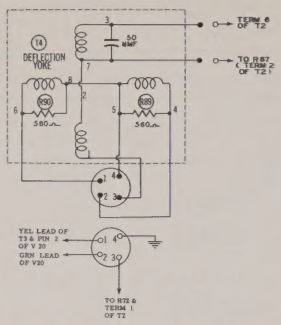
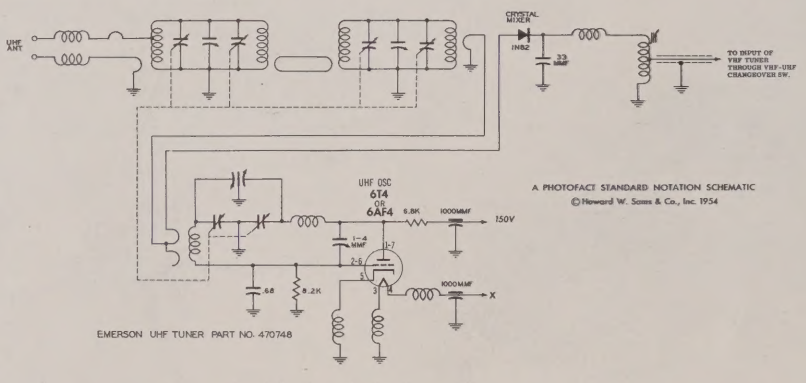
Ch. 120196-B (Con't)	
Ch. 120197-B	Ch. 120197-B is identical to Ch. 120196-B, except, the VHF tuner is changed to part #470712, and the UHF tuner (part #470713 or 470729) is used. The schematic for the tuners is given on page 13 in Photofact Folder 5, Set 235. The dial stringing for the UHF tuner is given on page 17.
Ch. 120197-D	Ch. 120197-D is identical to Ch. 120197-B, except, a 21YP4 picture tube is used. C81 and R88 are, also, omitted.
Ch. 120206-D	Ch. 120206-D is identical to Ch. 120182-D, except, a 21YP4 picture tube ised.
Ch. 120208-D	Ch. 120208-D is identical to Ch. 120182-D, except, a combination VHF-UHF tuner (part #470738) is used. A schematic of this tuner is given on page 4 in this bulletin. Alignment instructions for this tuner are given below:
Ch. 120211-D	Ch. 120211-D is identical to Ch. 120197-B, except, a 21YP4 picture tube is used and , C81 and R88 are omitted. The high voltage rectifier, V17, was changed to a type 1B3GT tube and the yoke socket and plug were omitted.
Ch. 120211-F	Ch. 120211-F is identical to Ch. 120211-D, except, a different UHF tuner (part #470748) is used. A schematic of this tuner is given below.



UHF RF ALIGNMENT

Turn set off.
Remove UHF IF output plug from socket on VHF section of tuner.
Connect a 100Ω carbon resistor from the center conductor to cable shield. (NOTE: If UHF tuner has test point Ⓔ, connect the scope directly across this point and omit the 100Ω resistor.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
14.	Fig. 7	Thru pad (Fig. 7) across UHF antenna terminals.	803MC (40MC Swp)	803MC	69	Vert. Amp. across 100Ω resistor (or to UHF test point Ⓔ)	A30, A31	(If channel 69 is occupied use channel 59 setting sweep at 743MC). Adjust for response similar to Fig. 8. Remove 100Ω resistor and reconnect shielded IF cable.

TUNER IF STRIP ALIGNMENT USING SEPARATE MARKER GENERATOR

Connect the negative lead of a 3 volt battery to the tuner AGC terminal. Connect the positive lead to chassis.
Set the fine tuning control to its mid-range position.
UHF channel oscillator circuit adjustments are reached thru a small hole above and to the left of the channel switch shaft. The correct oscillator strip adjustment is accessible thru this hole as the channel switch is turned to each UHF channel strip.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
15.	Fig. 7.	Thru pad (Fig. 7) across UHF antenna terminals	803MC (40MC Swp)	43.5MC	69	Vert. Amp. thru 10KΩ to point Ⓕ. Low side to chassis.	A37	Clip IF marker generator to insulated portion of UHF IF cable to provide markers. Adjust for zero beat on scope. NOTE: If it is difficult to obtain a beat pattern due to misaligned IF strip slowly adjust A40 one half turn at a time until beat pattern appears.
16.	"	"	"	43.5MC	69	"	A40, A41 A42	Adjust for maximum response similar to Fig. 9.

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ALTERNATE TUNER IF STRIP ALIGNMENT USING SWEEP GENERATOR WITH BUILT-IN MARKERS

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
15.	Fig. 7	Thru pad (Fig. 7) across UHF antenna terminals.	803MC (10MC Swp)	805.75MC	69	Vert. Amp. thru 10KΩ to point (A). Low side to chassis.	A37	If channel 59 is used sweep frequency of 742MC and marker frequency of 745.75MC Adjust to place sound marker in trap notch as in Fig. 10. Continue alignment with step 16.

UHF OSCILLATOR ADJUSTMENT

Set the fine tuning control to its mid-range position.
Leave IF marker generator coupled as under "UHF RF Alignment". Set IF marker generator at 43.5MC for remainder of UHF oscillator alignment.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
17.	Fig. 7.	Thru pad (Fig.7) across UHF terminals.	473MC (40MC Swp)	473MC	14	Vert. Amp. thru 10KΩ to point (F). Low side to chassis.	A32	Adjust so that IF marker falls at center of response curve as in Fig. 9.
			533MC (40MC Swp)	533MC	24		A33	
			593MC (40MC Swp)	543MC	34		A34	
			653MC (40MC Swp)	653MC	44		A35	
			713MC (40MC Swp)	713MC	54		A36	
			773MC (40MC Swp)	773MC	64		A37	
			833MC (40MC Swp)	833MC	74		A38	
			869MC (40MC Swp)	869MC	80		A39	

VHF OSCILLATOR ALIGNMENT

Connect the negative lead of a 3 volt battery to the tuner AGC terminal. Connect positive lead to chassis.
Connect the negative terminal of a 6 volt battery to the grid of the horizontal output tube (V15).
Connect the positive lead to chassis.
The channel oscillator adjustment screws are reached thru a hole in the fine tuning cam and the UHF section of the tuner. The correct adjustment screw is accessible thru this hole as the channel switch is turned to each channel.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
18.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	207MC (10MC Swp)	205.25MC 209.75MC	12	Vert. Amp. to point (A). Low side to chassis.	A43	Advance scope gain so that the sound trap notch is visible on response curve. Adjust to place sound marker in trap notch. Video marker should fall at 30% to 40% response on opposite slope of response curve as in Fig. 11.
			213MC (10MC Swp)	211.25MC 215.75MC	13		A44	
			201MC (10MC Swp)	199.25MC 203.75MC	11		A45	
			195MC (10MC Swp)	193.25MC 197.75MC	10		A46	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A47	
			183MC (10MC Swp)	181.25MC 185.75MC	8		A48	
			177MC (10MC Swp)	175.25MC 179.75MC	7		A49	
			85MC (10MC Swp)	83.25MC 87.75MC	6		A50	
			79MC (10MC Swp)	77.25MC 81.75MC	5		A51	
			69MC (10MC Swp)	67.25MC 71.75MC	4		A52	
			63MC (10MC Swp)	61.25MC 65.75MC	3		A53	
			57MC (10MC Swp)	55.25MC 59.75MC	2		A54	

VHF RF AND MIXER ALIGNMENT

Connect the bias batteries as under VHF oscillator alignment.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
19.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	207MC (10MC Swp)	205.25MC 209.75MC	12	Vert. Amp. thru 10KΩ to point (F). Low side to chassis.	A55,A56 A57	Adjust for maximum response similar to Fig . 12.
20.	"	"	213MC (10MC Swp)	211.25MC 215.75MC	13	"		Check for response similar to Fig. 12. If markers fall below 70% on any channel make compromise adjustment of A55, A56 and A57 . With channel switch set to that channel, then recheck all other channels to see that they have not been seriously affected.
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25MC 185.75MC	8			
			177MC (10MC Swp)	175.25MC 179.75MC	7			
			85MC (10MC Swp)	83.25MC 87.75MC	6			
			79MC (10MC Swp)	77.25MC 81.75MC	5			
			69MC (10MC Swp)	67.25MC 71.75MC	4			
			63MC (10MC Swp)	61.25MC 65.75MC	3			
			57MC (10MC Swp)	55.25MC 59.75MC	2			

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In later production of these chassis several production changes were made. The schematic in Photofact Folder Set 235-5 shows changes made through Code triangle B in Ch. 120182-D, 120195-D and 120197-B, -D. These changes were included in initial production of all other chassis.

Earlier production of these chassis varied as follows: In initial production a 12AU7 tube was used as horizontal AFC and horizontal oscillator (V14) and R71 was replaced by a jumper wire between pins 3 and 4 of V13. When V14 was changed to a 6SN7GT tube and R71 (68Ω) was added, the chassis was coded triangle A .

In chassis coded triangle B , C77 was added. In earlier production this capacitor was omitted and a single .0033MFD capacitor (C76) was used in this application. In later production a single .0068MFD capacitor is used in place of the two capacitors (C76 and C77).

In later production the following changes were made.

TO IMPROVE CENTERING

A 33Ω resistor was added between terminals 7 and 8 of the horizontal output transformer (T2). A 1.5Ω resistor was, also, added in series with the filament lead of the 1X2A, high voltage rectifier, to reduce filament current.

Chassis incorporating these changes are coded as follows:

Ch. 120182-D	C	Ch. 120206-D	Initial Production
Ch. 120195-D	C	Ch. 120208-D	Initial Production
Ch. 120196-B	A	Ch. 120211-D	Initial Production
Ch. 120197-B, -D	C	Ch. 120211-F	Initial Production

TO CENTER THE RANGE OF THE VERTICAL LINEARITY CONTROL

R70, in series with the vertical linearity control (R6), was changed from 470Ω to 1500Ω.

Chassis incorporating these changes are coded as follows:

Ch. 120182-D	D	Ch. 120206-D	A
Ch. 120195-D	D	Ch. 120208-D	Initial Production
Ch. 120196-B	B	Ch. 120211-D	Initial Production
Ch. 120197-B, -D	D	Ch. 120211-F	Initial Production

TO INCREASE THE BRIGHTNESS RANGE

R76 was changed from .0068MFD to 100MMF, 4KV, (part #928114) and reconnected between terminals 5 and 7 of the horizontal output transformer (T3).

Chassis incorporating these changes are coded as follows:

Ch. 120182-D	E	Ch. 120206-D	B
Ch. 120195-D	E	Ch. 120208-D	Initial Production
Ch. 120196-B	C	Ch. 120211-D	Initial Production
Ch. 120197-B, -D	E	Ch. 120211-F	Initial Production

COMPONENT CHANGE

To reduce the possibility of failure with the speaker disconnected, C51 was changed from .0047MFD, 400V, to .0047MFD, 600V.

Chassis incorporating this change are coded as follows:

Ch. 120182-D	F	Ch. 120206-D	C
Ch. 120195-D	F	Ch. 120208-D	Initial Production
Ch. 120196-B	D	Ch. 120211-D	F
Ch. 120197-B, -D	F	Ch. 120211-F	Initial Production

COMPONENT CHANGE

The two .047MFD capacitors (C79 and C80), connected across the AC line were changed to .01MFD units.

Chassis incorporating this change are coded as follows:

Ch. 120182-D	G	Ch. 120206-D	D
Ch. 120195-D	G	Ch. 120208-D	Initial Production
Ch. 120196-B	E	Ch. 120211-D	G
Ch. 120197-B, -D	G	Ch. 120211-F	Initial Production

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TO CENTER THE RANGE OF THE VERTICAL HOLD CONTROL

R65, in series with the vertical hold control (R3) was changed from 820KΩ to 1Meg.

Chassis incorporating this change are coded as follows:

Ch. 120182-D	H	Ch. 120206-D	E
Ch. 120195-D	H	Ch. 120208-D	A
Ch. 120196-B	F	Ch. 120211-D	H
Ch. 120197-B, -D	H	Ch. 120211-F	A

HIGH VOLTAGE RECTIFIER CHANGED

The 1X2A, high voltage rectifier, has been changed to a type 1B3GT in all chassis. The horizontal output transformer has been changed to accomodate the larger plate cap of the 1B3GT tube. The part number for this transformer is 738084.

Chassis incorporating this change were not given any code triangle, however, this change was made before the following change.

TO REDUCE OVERLOAD ON STRONG SIGNALS:

A 68Ω resistor was added in series with the lead from the contrast control (R1A) to the cathode (pin 2) of the video output tube (V7).

Chassis incorporating this change are coded as follows:

Ch. 120182-D	I	Ch. 120208-D	B
Ch. 120195-D	I	Ch. 120211-F	B
Ch. 120206-D	F		

PICTURE STABILIZER CONTROL ADDED

This control was added to stabilize sync in noisy areas. A partial schematic is given below which shows this circuit.

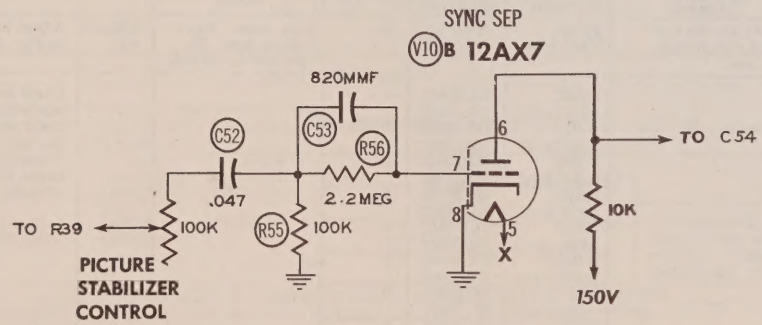
The control should normally be set in the extreme clockwise position (minimum resistance). If, in a noisy fringe area, greater sync stability is desired, rotate the control counter clockwise for best picture.

In order to accommodate the control the following mechanical changes were made.

1. The vertical linearity control was moved to a chassis hole near the power transformer.
2. The vertical size control was moved to the spot formerly occupied by the vertical linearity control.
3. The picture stabilizer control was added in the spot formerly occupied by the vertical size control.

Chassis incorporating this change are coded as follows:

Ch. 120182-D	J	Ch. 120208-D	C
Ch. 120195-D	J	Ch. 120211-D	J
Ch. 120206-D	G		



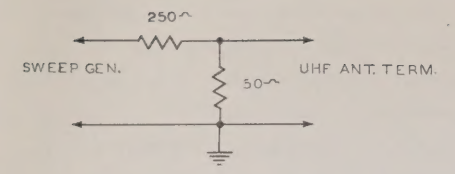


FIG. 7

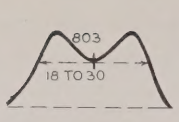


FIG. 8

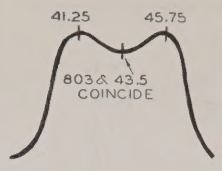


FIG. 9

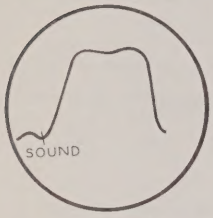


FIG. 10

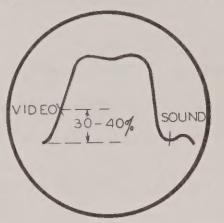
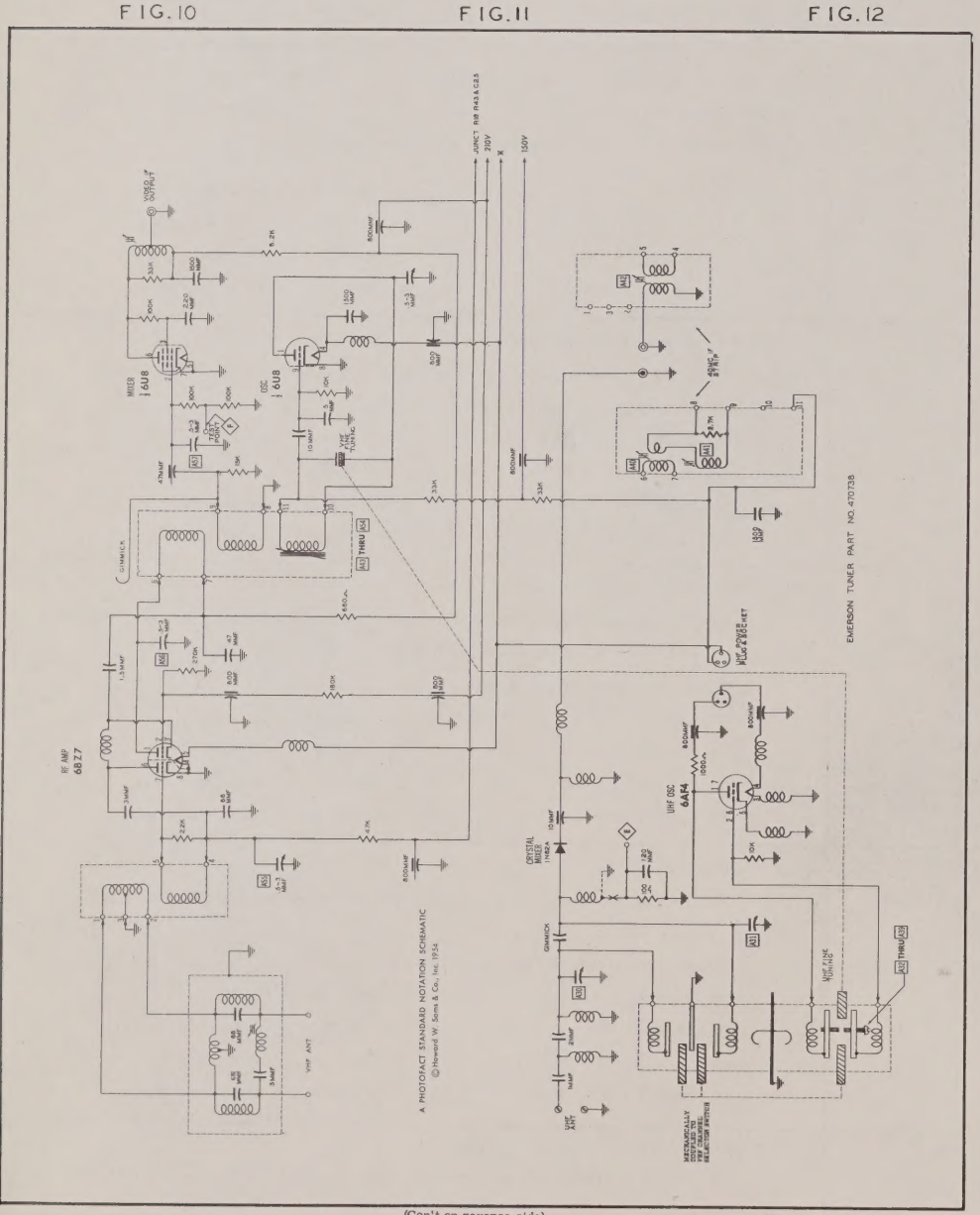


FIG. 11

FIG. 12



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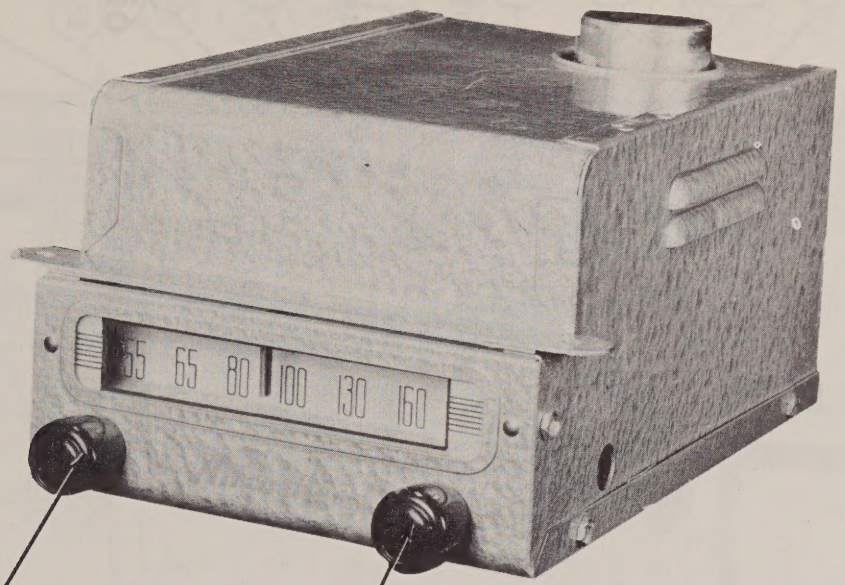
AIRCASTLE
MODEL 610.W-100



VOLUME CONTROL ON-OFF SWITCH

TUNING CONTROL

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AIRCASTLE
MODEL 610.W-100

TRADE NAME	Aircastle Model 610. W-100
SUPPLIER	Spiegel, Inc., 1061 W. 35th St., Chicago 9, Ill.
TYPE SET	Battery operated Universal Automobile Superheterodyne Receiver
TUBES (Five)	Types 6BE6 Conv., 6BA6 IF Amp., 6AT6 Det-AVC-AF Amp., 6AS5 Audio Output, 6X4 Rectifier
POWER SUPPLY	6 Volt Storage Battery — RATING 4 Amp. @ 6.3 Volts DC
TUNING RANGE—BROADCAST	538-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 6BE6 (V1). Low side to chassis.	455KC (400~ Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output
2.	100MMF	High side to antenna receptacle. Low side to chassis.	1600K	"	"	A5	"
3.	"	"	1400KC	Tune to 1400KC signal	"	A6	"
4.	"	"	600KC	Tune to 600KC signal	"	A7	Adjust for maximum output. Repeat steps 3 and 4 until no further improvement is noted.

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
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PARTS LIST AND DESCRIPTIONS

AIRCASTLE MODEL 610.W-100

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: AIRCASTLE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	Converter	6BE6	6BE6	7CH	
V2	IF Amplifier	6BA6	6BA6	7BK	
V3	Det.-AF Amp.	6AT6	6AT6	7BT	
V4	Audio Output	6AS5	6AS5	7CV	
V5	Rectifier	6X4	6X4	5BS	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIRCASTLE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	■20	150	CEX50	AFH3-67		C043		FP311,2	TVL-3415	
B	▲20	150								
C	20	25								
C2	.05	200	C207	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C3	100		CC200	S1100	D6-101	TP34	GP1K-101	UC-531	5GA-T1	
C4	.05	200	C207	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C5	2000		CC201	SI2000	D6-202	TP56	GP2L-202	UC-522	5GA-D2	
C6	2000		CC201	SI2000	D6-202	TP56	GP2L-202	UC-522	5GA-D2	
C7	.01	600	C203	P688-01	D6-103	CUB6S1	GP2-333-103	PT611	6TM-S1	Note 1
C8	.01	600	C206	P688-01	D6-103	CUB6S1	GP2-333-103	PT611	6TM-S1	
C9	.01	600	C206	P688-01	D6-103	CUB6S1	GP2-333-103	PT611	6TM-S1	
C10	.5	100	C209	VHC-36		MP2P5		RF480	HC-1	
C11	.5	100	C209	VHC-36		MP2P5		RF480	HC-1	
C12	.0125	1200	C220							

Note 1. Some Models may use a .002MMF in this application.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRCASTLE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	750KΩ	½	RV-W100	Q13-137	A47-750K-Z	B-70-S	U-51	Volume
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWE-12	Not Req.	US-26	Attach to R1A

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: AIRCASTLE PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R2	22KΩ	½		BTS-22K	Note 1
R3	270Ω	½		BTS-270	Note 2
R4	1500Ω	1		BTA-1500	
R5	2.2 Meg	½		BTS-2.2 Meg	Note 3
R6	4.7 Meg	½		BTS-4.7Meg	Note 4
R7	270KΩ	½		BTS-270K	Note 5
R8	470KΩ	½		BTS-470K	Note 6
R9	150Ω	½		BTS-150	
R10	1000Ω	1		BTA-1000	
R11	100Ω	½		BTS-100	
R12	100Ω	½		BTS-100	

Note 1. Some models may use a 20KΩ resistor in this application.
Note 2. Some models may use a 150Ω resistor in this application.
Note 3. Some models may use a 2 Meg resistor in this application.
Note 4. Some models may use a 5 Meg resistor in this application.
Note 5. Some models may use a 250KΩ resistor in this application.
Note 6. Some models may use a 500KΩ resistor in this application.

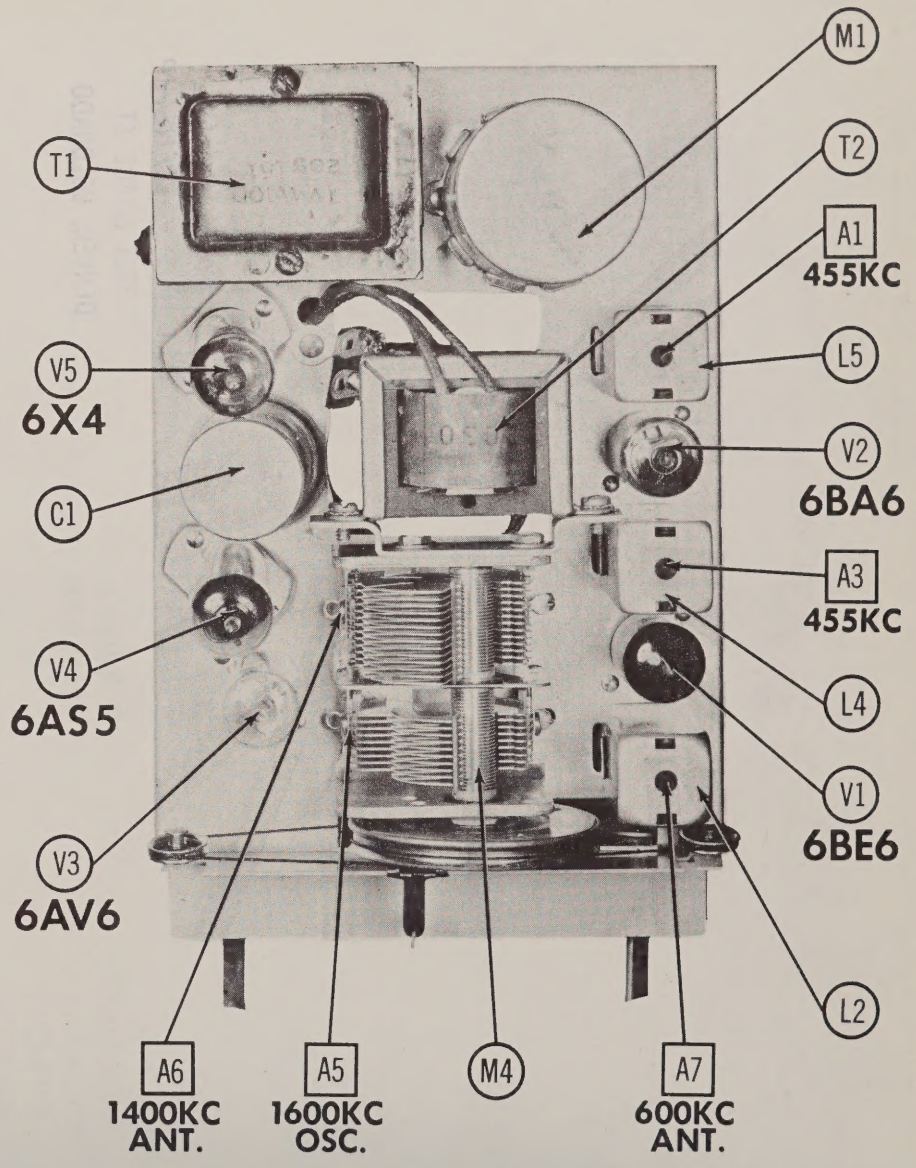
TRANSFORMER (VIBRATOR)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: AIRCASTLE PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.
T1	6.3VCT @1.8A	230VCT .035ADC			TV-W100					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	IMPEDANCE: SEC.	REPLACEMENT DATA: AIRCASTLE PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	NOTES
T2	2.6KΩ	3.4Ω		A-3876	A-2928	S-1X	Z1102	TS-24S50	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	AIRCASTLE PART No.	JENSEN PART No.	QUAM PART No.	
SP1	5"	PM	3.4Ω	PM-260	ST-105 Mod P5-X	5A07	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	AIRCASTLE PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Ant. Choke	1.2Ω		L200	19-1005 *		4624 *	14 Microhenries; wound on 10MMF capacitor
L2	Ant. Coil	14Ω	4.4Ω	57FB-3				
L3	Osc. Coil	9Ω		L201	14-1033 †	BC-381 †	71-Osc. †	Tapped @ .8Ω
L4	Input IF	18Ω	18Ω	1655-16	16-6758	BC-352	12-C1	
L5	Output IF	18Ω	18Ω	1655-16	16-6758	BC-353	12-C2	
L6	Fil. Choke	0Ω		L203		BC-537	5221	1.5 Microhenries
L7	Vibrator Hask Choke	0Ω		L202		BC-537	5221	13 Microhenries

* Connect in series with 10MMF capacitor.
† Drill mounting hole.

VIBRATOR

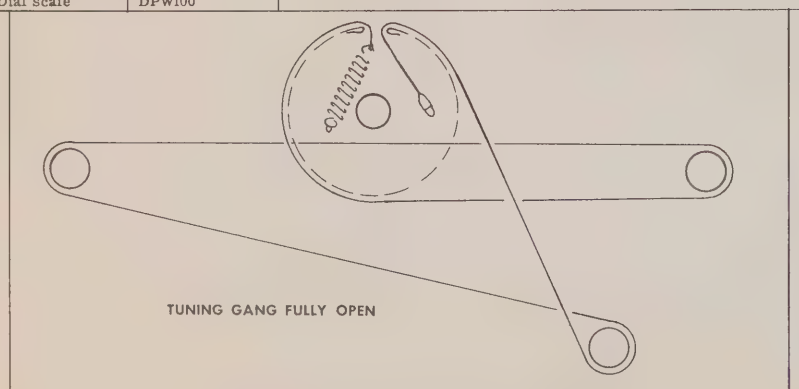
ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA				NOTES
				AIRCASTLE PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	RADIART PART No.	
M1	Interrupter	6.3V	115~	V-83A	5301	859	5301	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			AIRCASTLE PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	SFE	14A	A201	A300	307014. (SFE-14A)	155014	SFE14	HDI

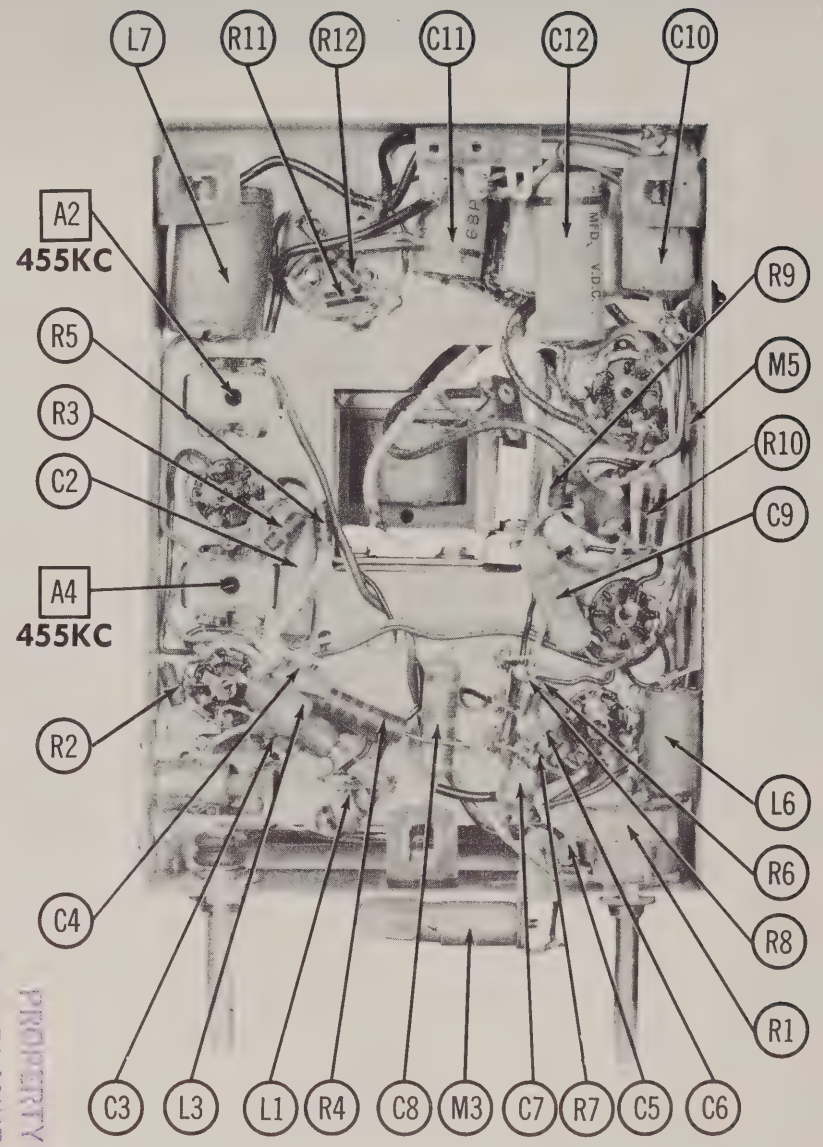
MISCELLANEOUS

ITEM No.	PART NAME	AIRCASTLE PART No.	NOTES
M3	Dial light	T47	# 47
M4	Tuning cap	CV-X50	(23-447MMF) (32-195MMF)
M5	Spark plate		
	Knob	H508	(2 used)
	Case bottom	H603	
	Case cover	H604	
	Dial scale	DPW100	



DRIVE CORD STRINGING

CHASSIS—BOTTOM VIEW



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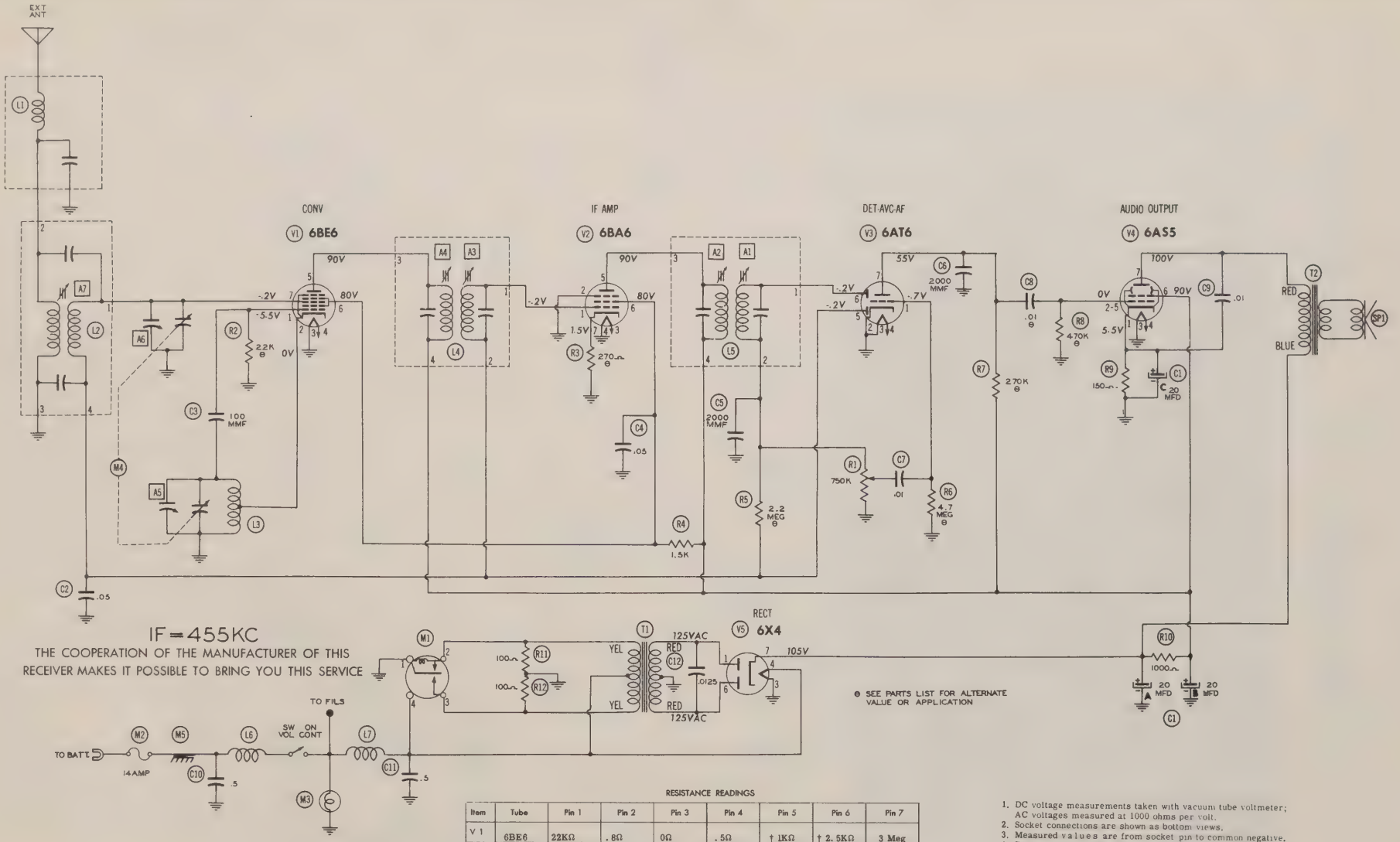
3924 MEADE ST.
DENVER, COLORADO

AIRCASTLE
MODEL 610.W-100



IF = 455KC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	6BE6	22KΩ	.8Ω	0Ω	.5Ω	† 1KΩ	† 2.5KΩ	3 Meg
V 2	6BA6	3 Meg	0Ω	.5Ω	0Ω	† 1KΩ	† 2.5KΩ	270Ω
V 3	6AT6	4.7 Meg	0Ω	0Ω	.5Ω	3 Meg	750KΩ	† 270KΩ
V 4	6AS5	150Ω	470KΩ	0Ω	.5Ω	470KΩ	† 1KΩ	† 150Ω
V 5	6X4	246Ω	INF	0Ω	.5Ω	INF	273Ω	150KΩ

† MEASURED FROM PIN 7 OF V5.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 6.3 volts for voltage readings.
5. Nominal tolerance on components values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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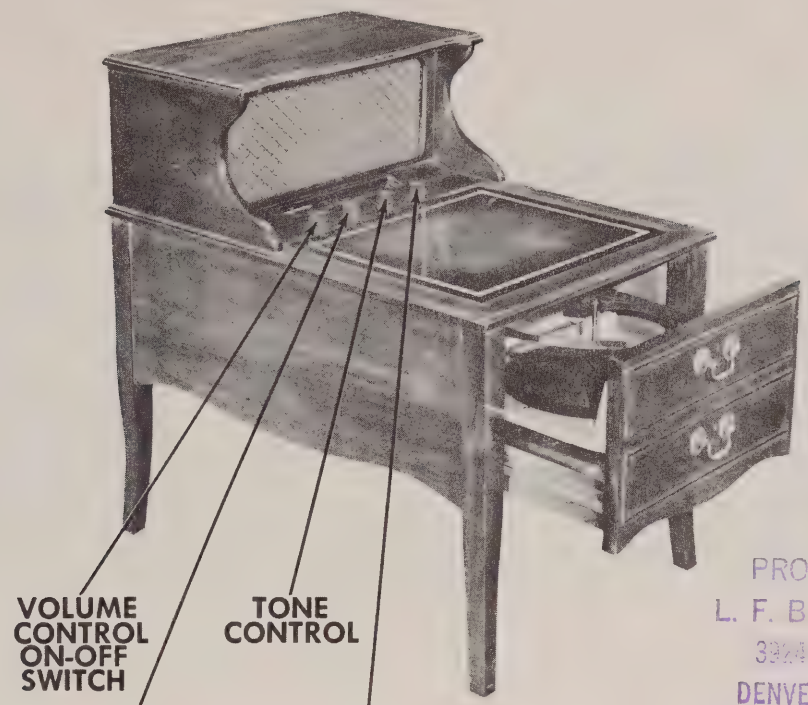
AIRLINE
MODEL 35GSL-2770A



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L. F. BLANKENSHIP
3324 MEADE ST.
DENVER, COLORADO

AIRLINE
MODEL 35GSL-2770A

TRADE NAME	Airline Model 35GSL-2770A
SUPPLIER	Montgomery Ward & Co., 619 Chicago Ave., Chicago, Ill.
TYPE SET	AC Operated Radio-Phono Combination Superheterodyne Receiver
TUBES (Six)	Types 12BA6 RF Amp., 12BE6 Conv., 12BA6 IF Amp., 12AV6 Det.-AVC-AF Amp., 35C5 Audio Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycles RATING .24 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning capacitor fully closed and set pointer parallel with base of dial. Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05MFD	High side to pin 7 (grid) of 12BE6 (V2). Low side to B-.	455KC (400~Mod)	Quiet point near center of dial.	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.		Place high side lead near loop antenna	455KC	Tuning gang fully closed	"	A5	Adjust for MINIMUM deflection.
3.	.05MFD	High side to antenna stator lug on tuning gang	1620KC	Tuning gang fully open	"	A6	Adjust for maximum deflection.
4.		Loop	1400KC	Tune to 1400KC signal	"	A7	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

FOR SERVICE INFORMATION ON RECORD CHANGER UNIT- SEE V-M MODEL 950, PHOTOFACT SET 216 - FOLDER 11 OR RECORD CHANGER MANUAL CM-5

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PARTS LIST AND DESCRIPTIONS

AIRLINE
MODEL 35GSL-2770A

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	RF Amplifier	12BA6	12BA6	7BK	
V2	Converter	12BE6	12BE6	7CH	
V3	IF Amplifier	12BA6	12BA6	7BK	
V4	Det.-AF Amp.	12AV6	12AV6	7BT	
V5	Audio Output	35C5	35C5	7CV	
V6	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIRLINE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	50	150	N-9641	PRS150/50-50		BBRD5515		TCD49	TVA-2453	Blue Red
B	50	150								
C2	.05	200		P288-05	DF-503	CUB2S5		PT415	2TM-S5	
C3	.01	400		P488-01	D6-103	CUB4S1	GP2-333-103	PT411	4TM-S1	
C4	220		N-9655	SI220	D6-221	TP39	GP2K-221	UC-5322	5GA-T22	
C5	33		N-9577	SI33NP0	TCZ-33	TZ18	NP0K-330	ZT-5433	5TCC-Q33	
C6	220		N-9655	SI220	D6-221	TP39	GP2K-221	UC-5322	5GA-T22	
C7	100			SI100	D6-101	TP34	GP1K-101	UC-531	5GA-T1	
C8	.005	600		P688-005	D6-502	CUB6D5	GP2-333-502	PT625	6TM-D5	
C9	.01	400		P488-01	D6-103	CUB4S1	GP2-333-103	PT411	4TM-S1	
C10A	.005		♦N-8215	♦PA-112-2	♦PC-71	♦112TM2	♦1406-02		♦104C5	
B	250									
C										
C11	.01	400		P488-01	D6-103	CUB4S1	GP2-333-103	PT411	4TM-S1	
C12	.05	400		P488-05	DF-503	CUB4S5		PT415	4TM-S5	
C13	.02	400		P488-02	DF-203	CUB4S2		PT412	4TM-S2	
C14	.08	200	N-8092							

♦ Items C10A, C10B, C10C, R12A, R12B are combined in one unit.
When replacing items separately C10B and C10C should total 250MMF.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRLINE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500KΩ	½	N-9639	Q13-133	A47-500K-Z	BSK-60-S	U-48	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWE-12	Not Req.	US-26	Attach to R1A
R2A	1Meg	½	N-9642	Q13-137	A47-1Meg-Z	BSK-70	U-53	Tone
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R2A

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: AIRLINE PART No.	IRC PART No.	NOTES
R3	33Ω	½		BTS-33	
R4	33KΩ	½		BTS-33K	
R5	6800Ω	½		BTS-6800	
R6	220KΩ	½		BTS-220K	
R7	22KΩ	½		BTS-22K	
R8	68Ω	½		BTS-68	
R9	1Meg	½		BTS-1Meg	
R10	1Meg	½		BTS-1Meg	

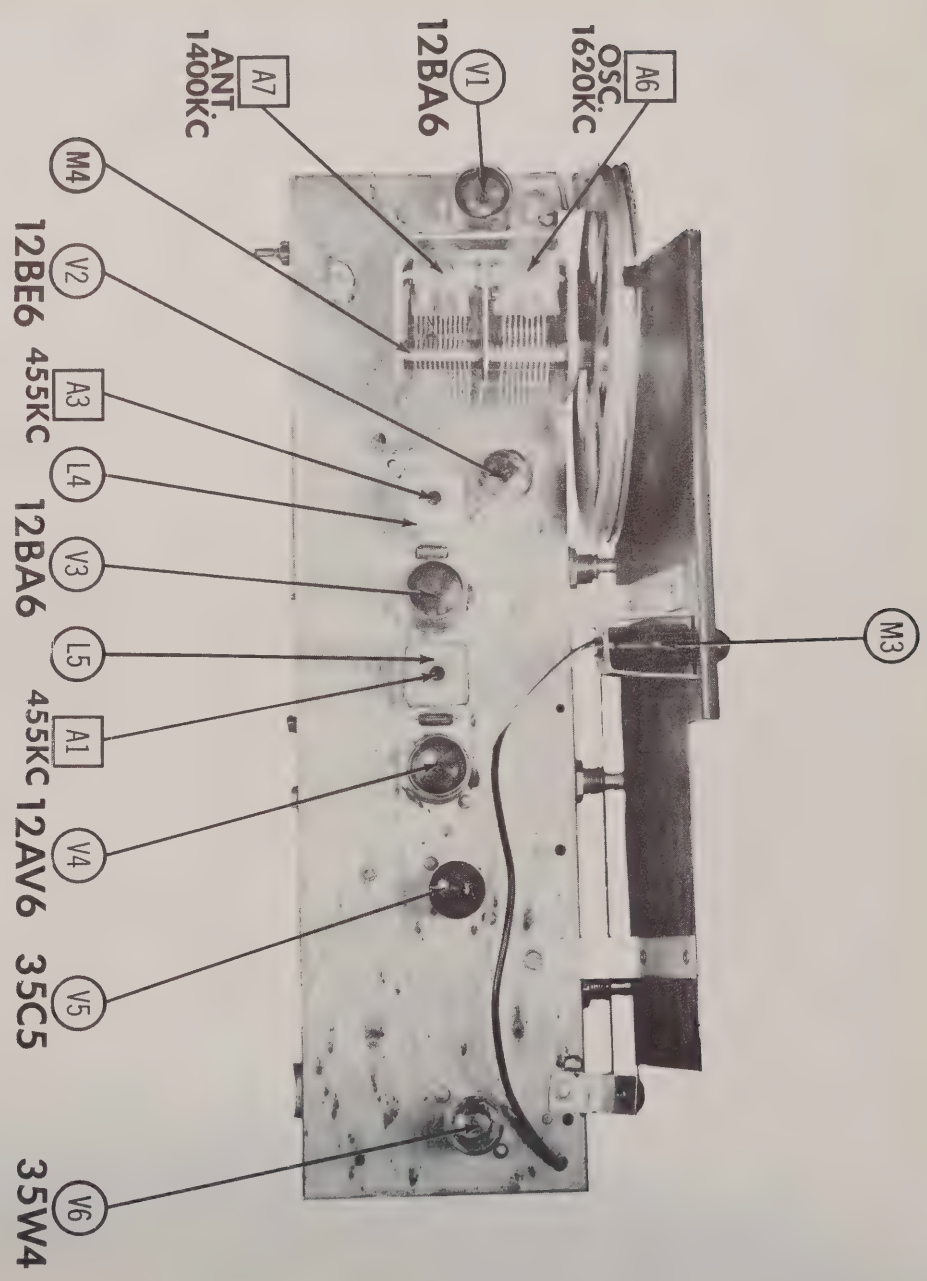
ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: AIRLINE PART No.	IRC PART No.	NOTES
R11	3.3Meg	½	♦N-8215	BTS-3.3Meg	
R12A	250KΩ	½			
B	500KΩ	½			
R13	150Ω	½		BTS-150	
R14	1000Ω	1		BTA-1000	
R15	1Meg	½		BTS-1Meg	
R16	33Ω	½		BTS-33	
R17	100Ω	½		BTS-100	

♦ Items R12A, R12B, C10A, C10B, C10C are combined in one unit.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	IMPEDANCE: SEC.	REPLACEMENT DATA: AIRLINE PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	NOTES
T1	2.4KΩ	3.3Ω	N-9664	A-3336	A-3031		Z1103	TS-24S50A	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	AIRLINE PART No.	JENSEN PART No.	QUAM PART No.	
SP1	8"	PM	3.2Ω	N-9651	ST-115 Mod. P8-V	8A21	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	AIRLINE PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Ant.	.2Ω	3.2Ω	N-9652				
L2	IF Trap Coil	50Ω		N-9650				
L3	Osc. Coil	.7Ω	8Ω	N-8709	14-1073		69-Osc.†	
L4	Input IF	9Ω	9Ω	N-9657	16-6758	BC-352	12-C1	
L5	Output IF	9Ω	9Ω	N-9657	16-6758	BC-353	12-C2	

† Drill mounting hole.

PHONO CARTRIDGE and NEEDLE

ITEM No.	REPLACEMENT DATA							REMARKS
	AIRLINE PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1	60H24	ACD-J	A-1 or A-3	W22AB	A62A A65MG	46	0-1 or S-1 & 0-3 or S-3	

ASTATIC, SHURE AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED . FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENT SEE BELOW.

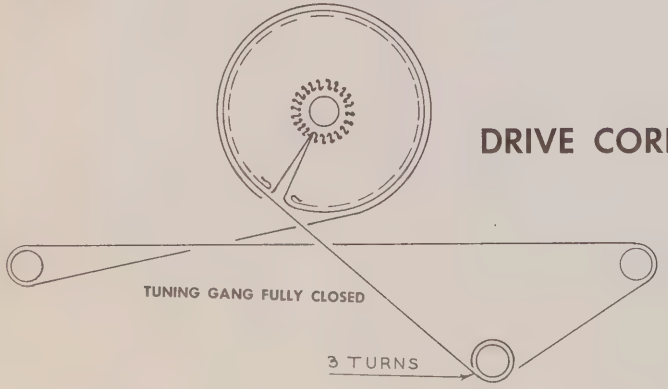
PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA				REMARKS
	AIRLINE PART No.	JENSEN PART No.	PERMO PART No.	WALCO PART No.	
M2	61H29 (3 Mil) and 61H30 (1 Mil)	*JP-30 or †JPRS-30 and †JPS-30LP or *JP-30LP	*C-320 or †C-318 and *A-322 or †A-300	*W-30A and †W-30MGS	* Metal † Jewel

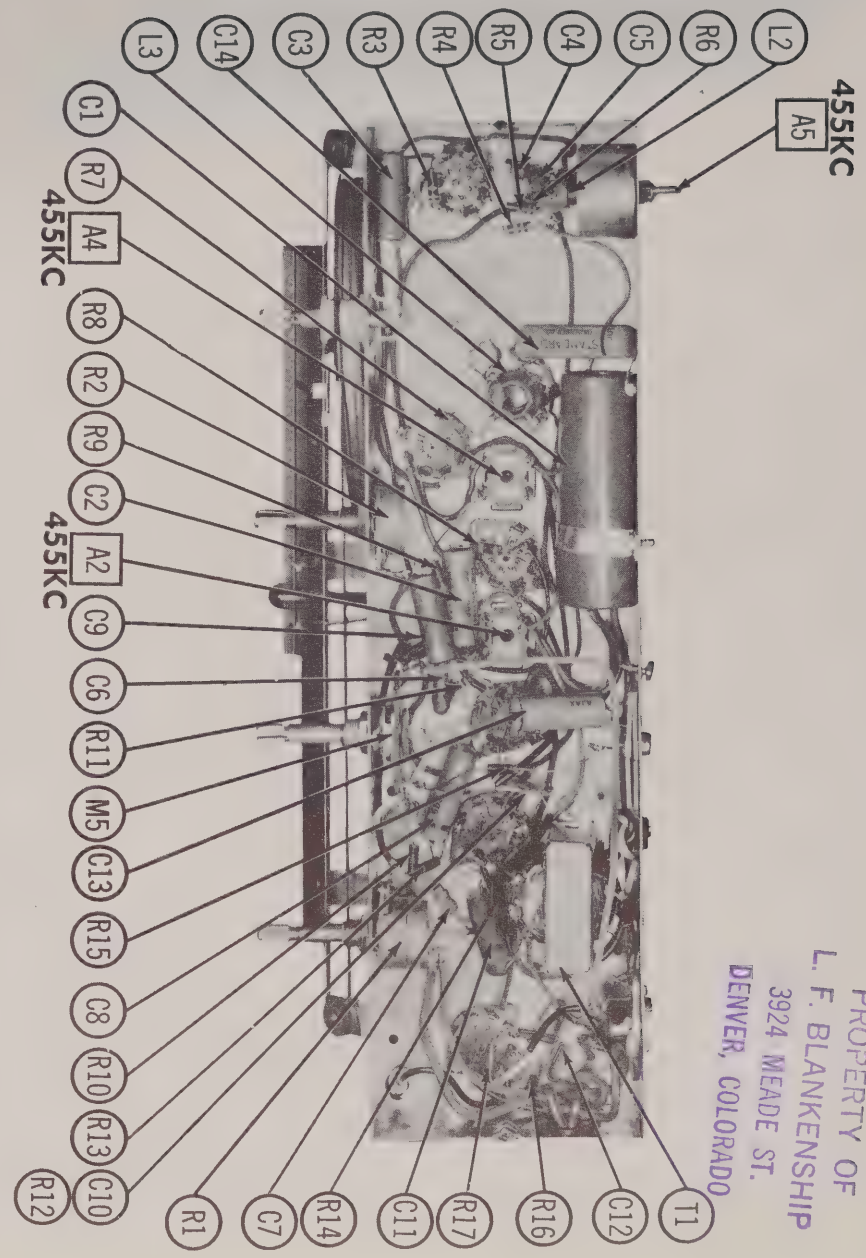
MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
M3	Dial Light	N-1147	#47 Bayonet
M4	Tuning Cap.	N-9658	2 Section (31-390MMF, 16-120MMF)
M5	Switch		Radio-Phono
	Knob	N-9732	(4) used



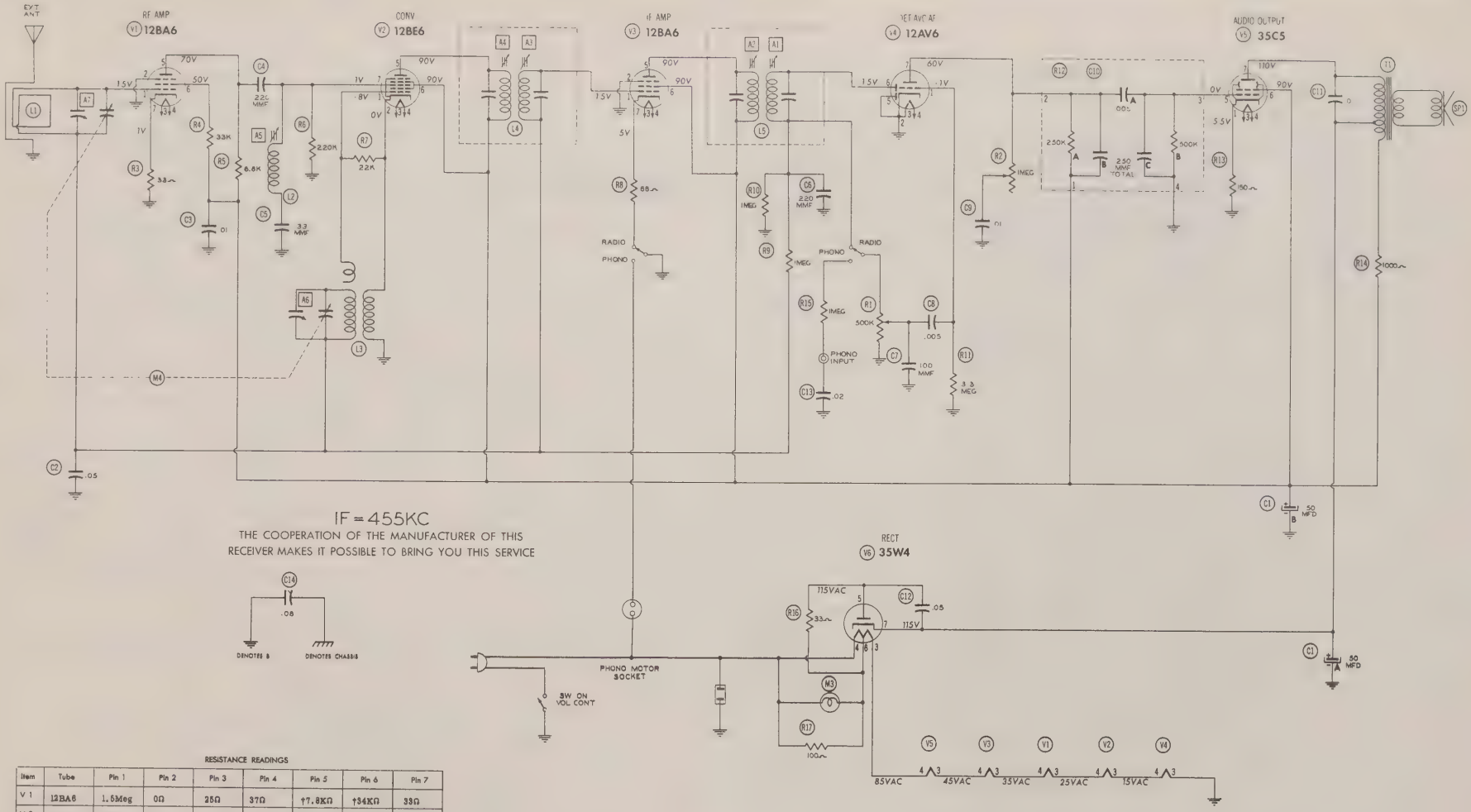
DRIVE CORD STRINGING

CHASSIS—BOTTOM VIEW



PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

AIRLINE
MODEL 35GSL-2770A



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BA6	1.5Meg	0Ω	25Ω	37Ω	†7.8KΩ	†34KΩ	33Ω
V 2	12BE6	22KΩ	.7Ω	13Ω	25Ω	†1KΩ	†1KΩ	220KΩ
V 3	12BA6	1.5Meg	0Ω	37Ω	50Ω	†1KΩ	†1KΩ	68Ω
V 4	12AV6	3.3Meg	0Ω	0Ω	13Ω	0Ω	500KΩ	†250KΩ
V 5	35C5	150Ω	500KΩ	50Ω	85Ω	500KΩ	†1KΩ	†150Ω
V 6	35W4	INF	INF	85Ω	115Ω	150Ω	110Ω	500KΩ

† MEASURED FROM PIN 7 OF V6

1 DC voltage measurements taken with vacuum tube voltmeter, AC voltages measured at 1000 ohms per volt
2 Socket connections are shown as bottom views
3 Measured values are from socket pin to common negative.
4 Line voltage maintained at 117 volts for voltage readings.
5 Normal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings
6 Volume control at maximum, no signal applied for voltage measurements

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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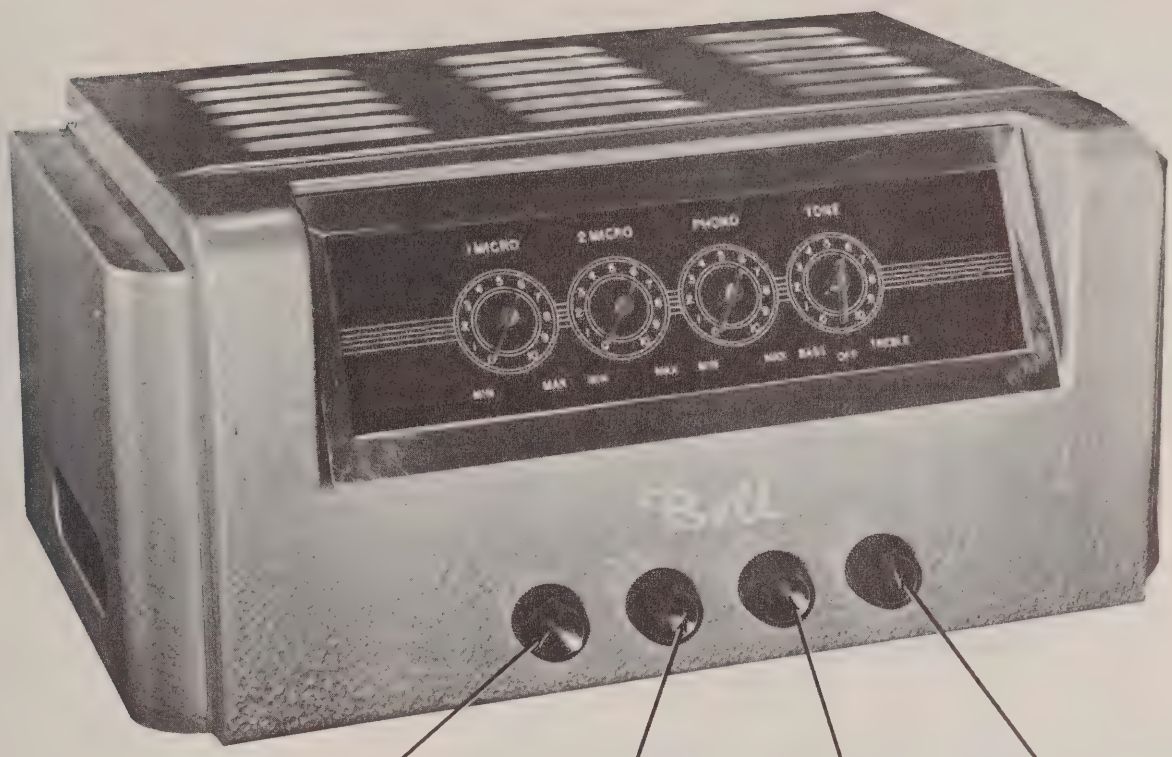
BELL SOUND
MODELS PA3715-B, 3715-B



BELL SOUND
MODELS PA3715-B, 3715-B

TRADE NAME	Bell Sound Models PA3715-B, 3715-B
MANUFACTURER	Bell Sound Systems, Inc., 555 Marion Rd., Columbus, Ohio
TYPE SET	AC Operated 3 Channel 15 Watt Audio Amplifier
TUBES (Seven)	Types (2) 6AU6 Mic Pre-Amp., 6SF5 AF Amp., 6N7 Phase Inv., (2) 6V6GT Audio Output 5U4G Rectifier
POWER SUPPLY	110-120 Volts AC-50/60 Cycles RATING 1.78 Amp. @ 117 Volts AC

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PARTS LIST AND DESCRIPTIONS

BELL SOUND
MODEL PA3715-B

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		Bell Sound PART No.	STANDARD REPLACEMENT		
V1	Mic 1 Pre-Amp.	6AU6	6AU6	7BK	
V2	Mic 2 Pre-Amp.	6AU6	6AU6	7BK	
V3	AF Amplifier	6SF5	6SF5	6AB	
V4	Phase Inverter	6N7	6N7	8B	
V5	Audio Output	6V6GT	6V6GT	7S	
V6	Audio Output	6V6GT	6V6GT	7S	
V7	Rectifier	5U4G	5U4G	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	Bell Sound PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	▲10	450		AFH2-47		B037		FP231	TVL-2750	
B	▲10	450								Note 1
C2A	▲10	450		AFH2-47		B037		FP231	TVL-2750	Note 2
B	▲10	450								Note 3
C3A	▲10	450		AFH2-47		B037		FP231	TVL-2750	
B	▲10	450								
C4	50	50		PRS50/50		BR505		TC39	TVA-1308	
C5	10	25		PRS25/10		BR102		TC22	TVA-1204	
C6	10	25		PRS25/10		BR102		TC22	TVA-1204	
C7	10000			BPD-01	DD-103	TM5S1	811-01	DC-511	5HK-S1	
C8	.05	600		P688-05	DF-503	PTE6S5		PT615	6TM-S5	
C9	10000			BPD-01	DD-103	TM5S1	811-01	DC-511	5HK-S1	
C10	.05	600		P688-05	DF-503	PTE6S5		PT615	6TM-S5	
C11	.01	400		P688-01		PTE6S1		PT611	6TM-S1	
C12	.1	600		P688-1		PTE6P1		PT601	6TM-P1	
C13	36	500								Note 4
C14	36	500								Note 4
C15	.1	600		P688-1		PTE6P1		PT601	6TM-P1	
C16	.1	600		P688-1		PTE6P1		PT601	6TM-P1	

Note 1. C1B may be combined with C2A and C2B to give 30MFD @ 450V in some models.
Note 2. Some models may use a 100MMF @ 500V in this application.

CONTROLS

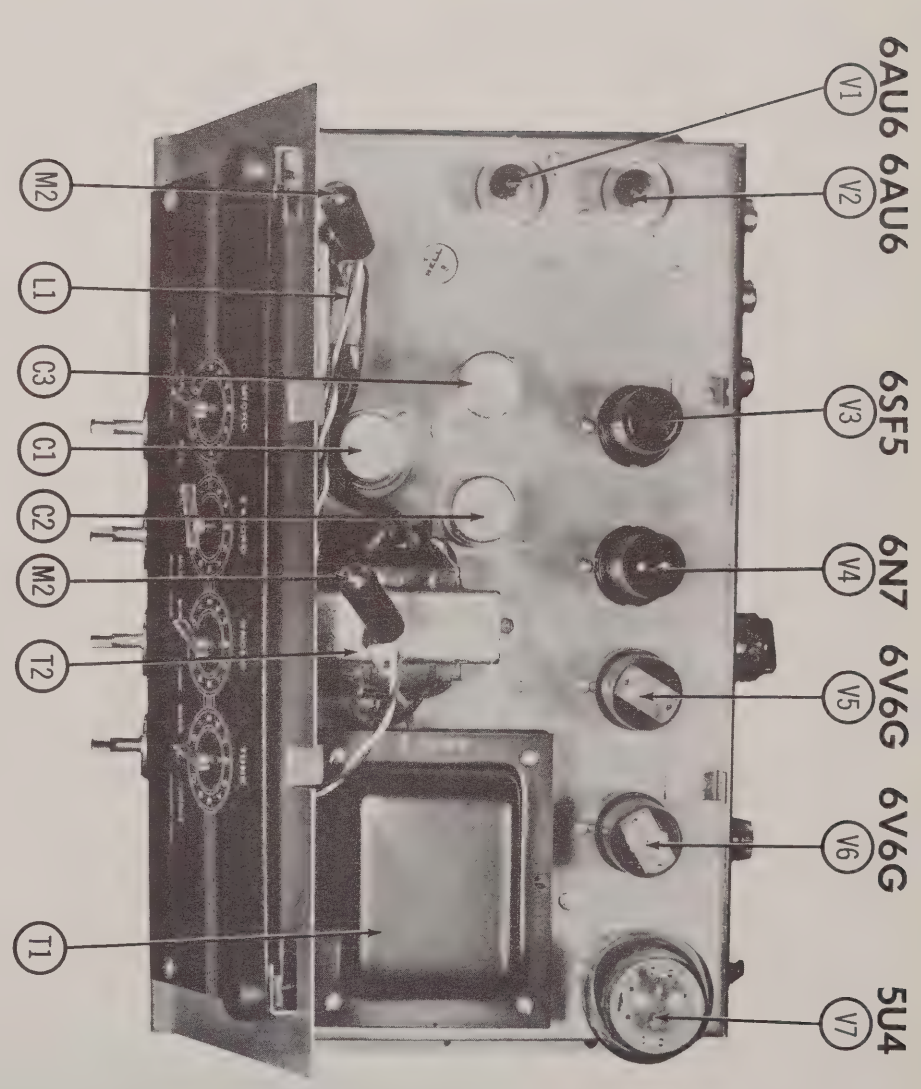
ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Bell Sound PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	1Meg	½	B20066P-106	Q13-137	A47-1Meg-Z	AB-70	U-53	Mike Volume #1
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R1A
R2A	1Meg	½	B20066P-106	Q13-137	A47-1Meg-Z	AB-70	U-53	Mike Volume #2
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R2A
R3A	500KΩ	½	B20066P-107	Q1-3133	A47-500K-Z	BSK-60	U-48	Phono Volume
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R3A
R4A	500KΩ	½	B20066P-108	Q13-133	A47-500K-Z	BSK-60-S	U-48	Tone
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R4A
C	Switch		Not Req.	76-1	SWE-12	Not Req.	US-26	Attach to R4A

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	Bell Sound PART No.	IRC PART No.	
R5	3.3Meg	½		BTS-3.3Meg	
R6	15KΩ	½		BTS-15K	
R7	100KΩ	½		BTS-100K	
R8	100KΩ	½		BTS-100K	
R9	3.3Meg	½		BTS-3.3Meg	
R10	15KΩ	½		BTS-15K	
R11	100KΩ	½		BTS-100K	
R12	100KΩ	½		BTS-100K	
R13	270KΩ	½		BTS-270K	
R14	270KΩ	½		BTS-270K	
R15	270KΩ	½		BTS-270K	
R16	150KΩ	½		BTS-150K	
R17	3300Ω	½		BTS-3300	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	Bell Sound PART No.	IRC PART No.	
R18	270KΩ	½		BTS-270K	
R19	470KΩ	½		BTS-470K	
R20	2200Ω	½		BTS-2200	
R21	22KΩ	½		BTS-22K	
R22	100KΩ	½		BTS-100K	
R23	100KΩ	½		BTS-100K	
R24	75KΩ	½		BTS-75K	
R25	250Ω	10		1 3/4A-250	
R26	100KΩ	½		BTS-100K	
R27	25KΩ	10		1 3/4A-25K	
R28	470Ω	½		BTS-470	
R29	47KΩ	1		BTA-47K	
R30	200Ω	10		1 3/4A-200	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	Bell Sound PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.
T1	117VAC @1.78A	710VCT .122A	5VAC @3A	6.3VCT @3.3A	B-20059	PM-8410①	P-3078②	R-16B ①	P9314 ①	26R23 ①

① Drill new mounting holes.
② Tape extra 6.3V secondaries

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	Bell Sound PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	
T2	5.8KΩ CT	500Ω ①	B-20056-7						

① 500Ω tapped @ 330Ω, 250, 200Ω (not connected), 15Ω, 8Ω, 4Ω and 2Ω.

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	Bell Sound PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.
L1	.122A	90Ω	4.8 Hy.	B-20055	C-1710		C-13X		20C64

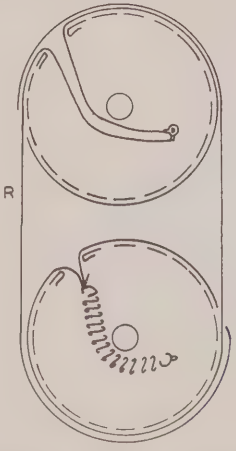
FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			Bell Sound PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	2A 250V			312002 (3AG-2A)	155020	AGC 2	HDJ

MISCELLANEOUS

ITEM No.	PART NAME	Bell Sound PART No.	NOTES
M2	Dial Light		#51 Bayonet (2) used
M3	Switch		Impedance matching

DIAL CORD STRINGING FOR ALL FOUR CONTROLS.



DRIVE CORD STRINGING

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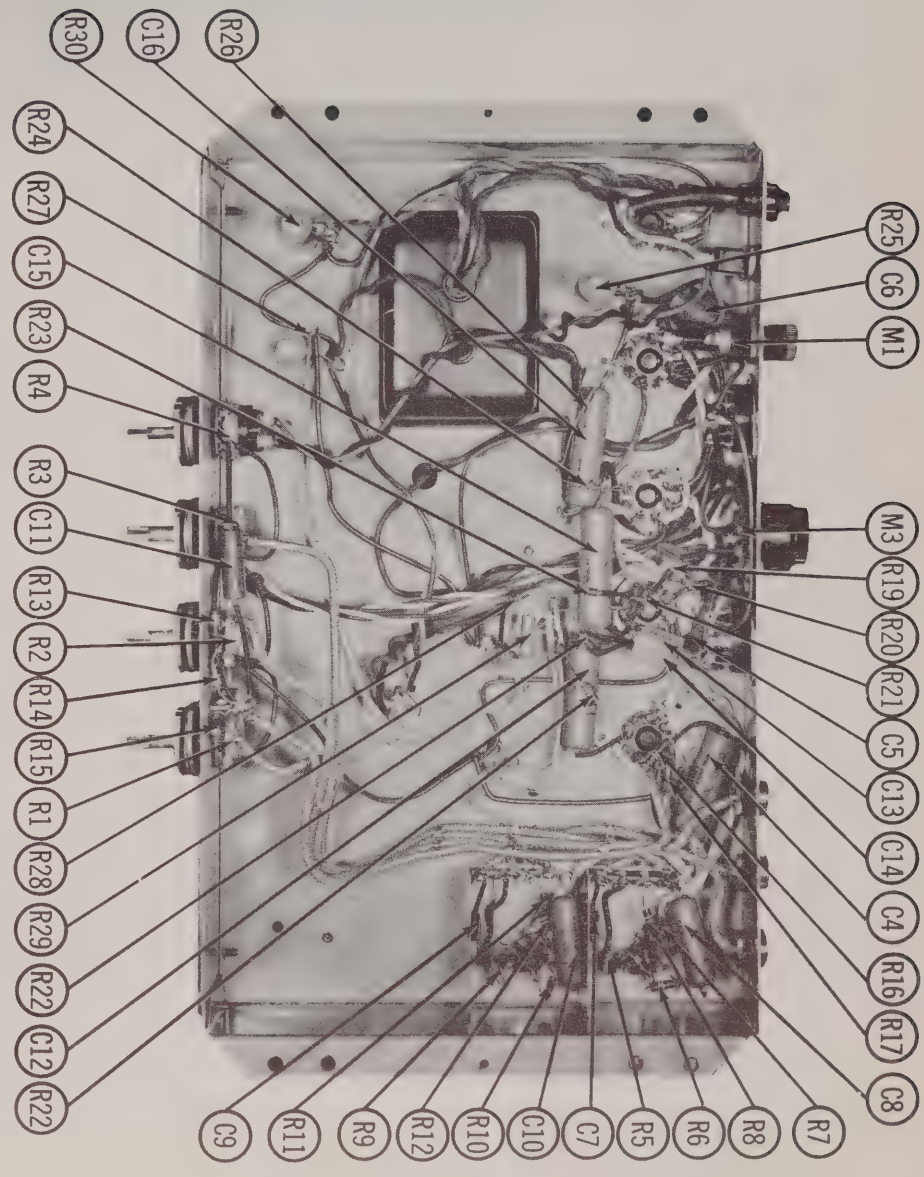
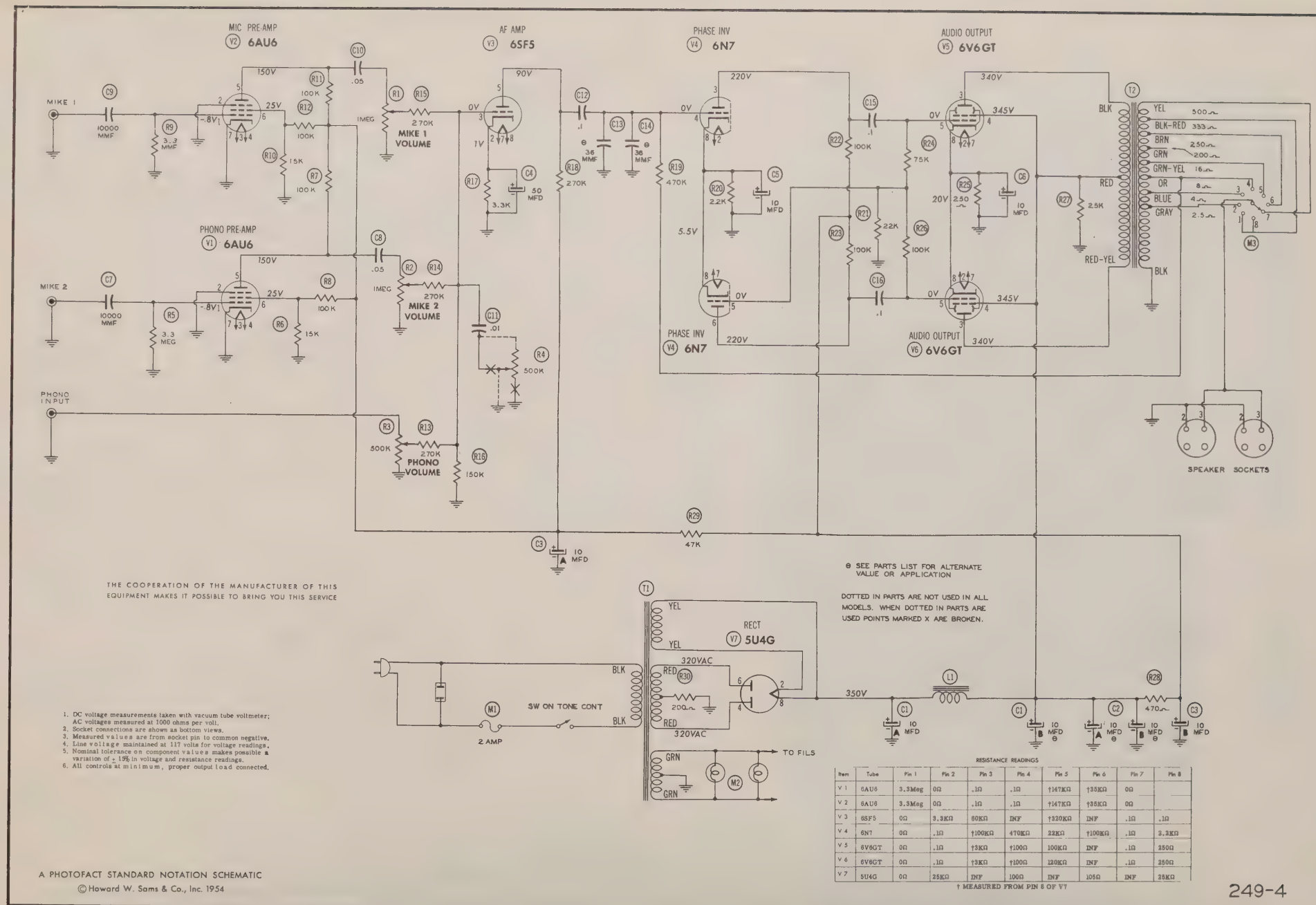
CHASSIS—BOTTOM VIEW



BELL SOUND
MODEL PA3715-B

BELL SOUND
MODEL PA3715-B



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6AU6	3.3Meg	0Ω	.1Ω	.1Ω	†147KΩ	†35KΩ	0Ω	
V 2	6AU6	3.3Meg	0Ω	.1Ω	.1Ω	†147KΩ	†35KΩ	0Ω	
V 3	6SF5	0Ω	3.3KΩ	60KΩ	INF	†320KΩ	INF	.1Ω	.1Ω
V 4	6N7	0Ω	.1Ω	†100KΩ	470KΩ	22KΩ	†100KΩ	.1Ω	3.3KΩ
V 5	6V6GT	0Ω	.1Ω	†3KΩ	†100Ω	100KΩ	INF	.1Ω	250Ω
V 6	6V6GT	0Ω	.1Ω	†3KΩ	†100Ω	120KΩ	INF	.1Ω	250Ω
V 7	5U4G	0Ω	25KΩ	INF	100Ω	INF	105Ω	INF	25KΩ

† MEASURED FROM PIN 8 OF V7

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CROSLEY MODELS G-17TOBH, TOBKH, TOBU, TOMH, TOMU, TOWEH, TOWH, TOWU (Ch. 426)

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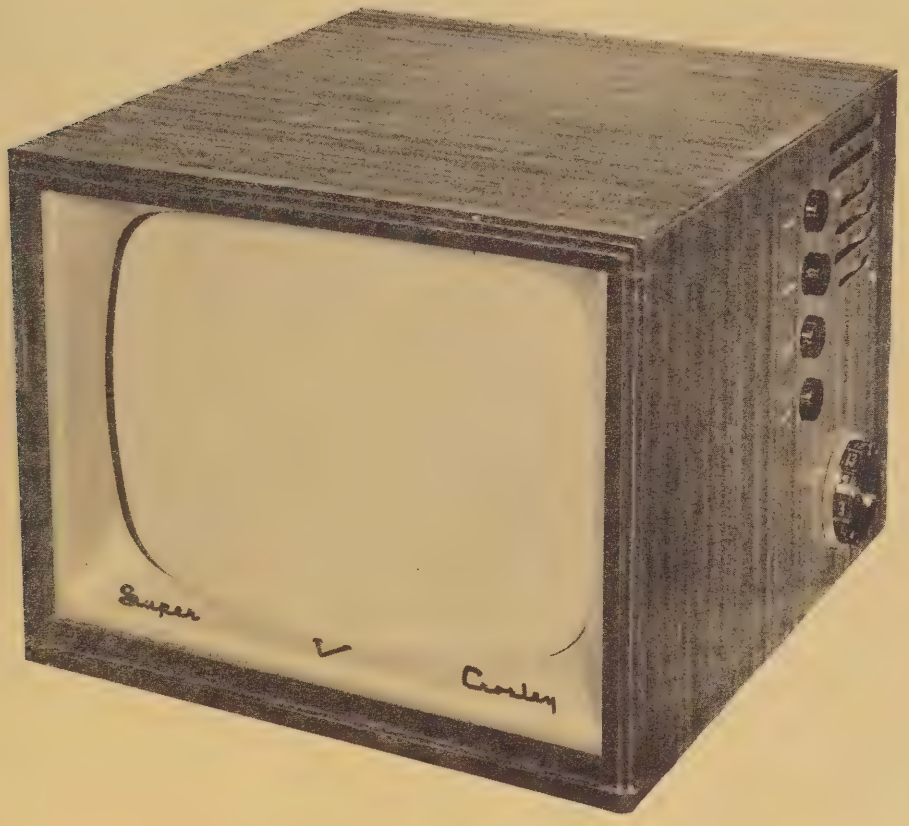

MODEL G-17TOMH

CROSLEY MODELS G-17TOBH, TOBKH, TOBU, TOMH, TOMU, TOWEH, TOWH, TOWU (Ch. 426)

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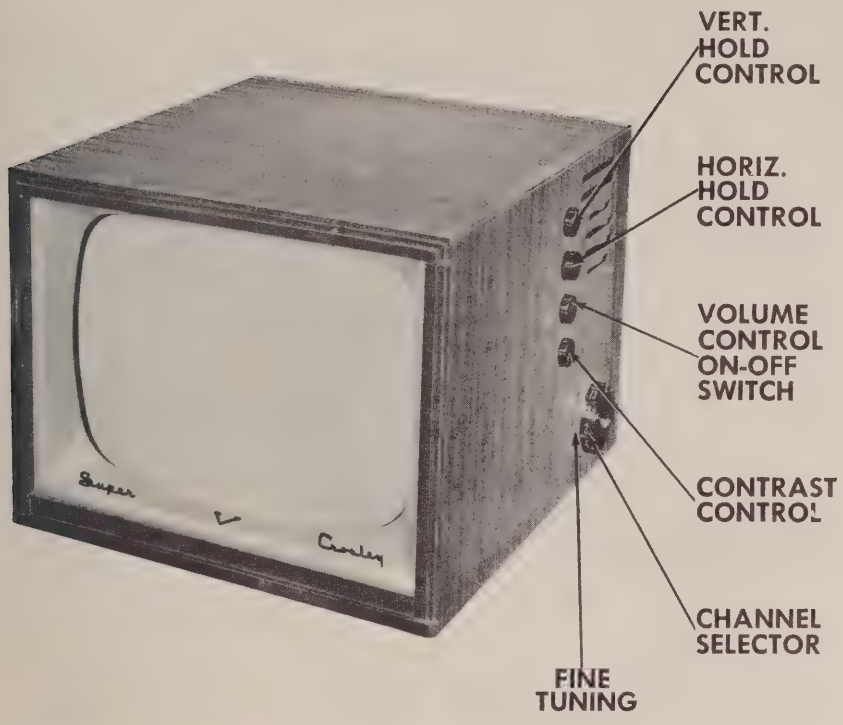

CROSLEY MODEL G-17TOMH

TRADE NAME	Crosley	MODELS G-17TOBH, G-17TOBKH, G-17TOBU, G-17TOMH, G-17TOMU, G-17TOWEH, G-17TOWH, G-17TOWU	CHASSIS 426
MANUFACTURER	Crosley Corp., 1329 Arlington St., Cincinnati, Ohio		
TYPE SET	Television Receiver		
TUBES	Fifteen		
POWER SUPPLY	110-120 Volts AC-60 Cycles	RATING 1.16 Amp. @ 117 Volts AC	
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 26.4MC, Sound IF 21.9MC (Intercarrier)		

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CROSLEY MODELS
G-17TOBH, TOBKH, TOBU, TOMH,
TOMU, TOWEH, TOWH, TOWU (Ch. 426)

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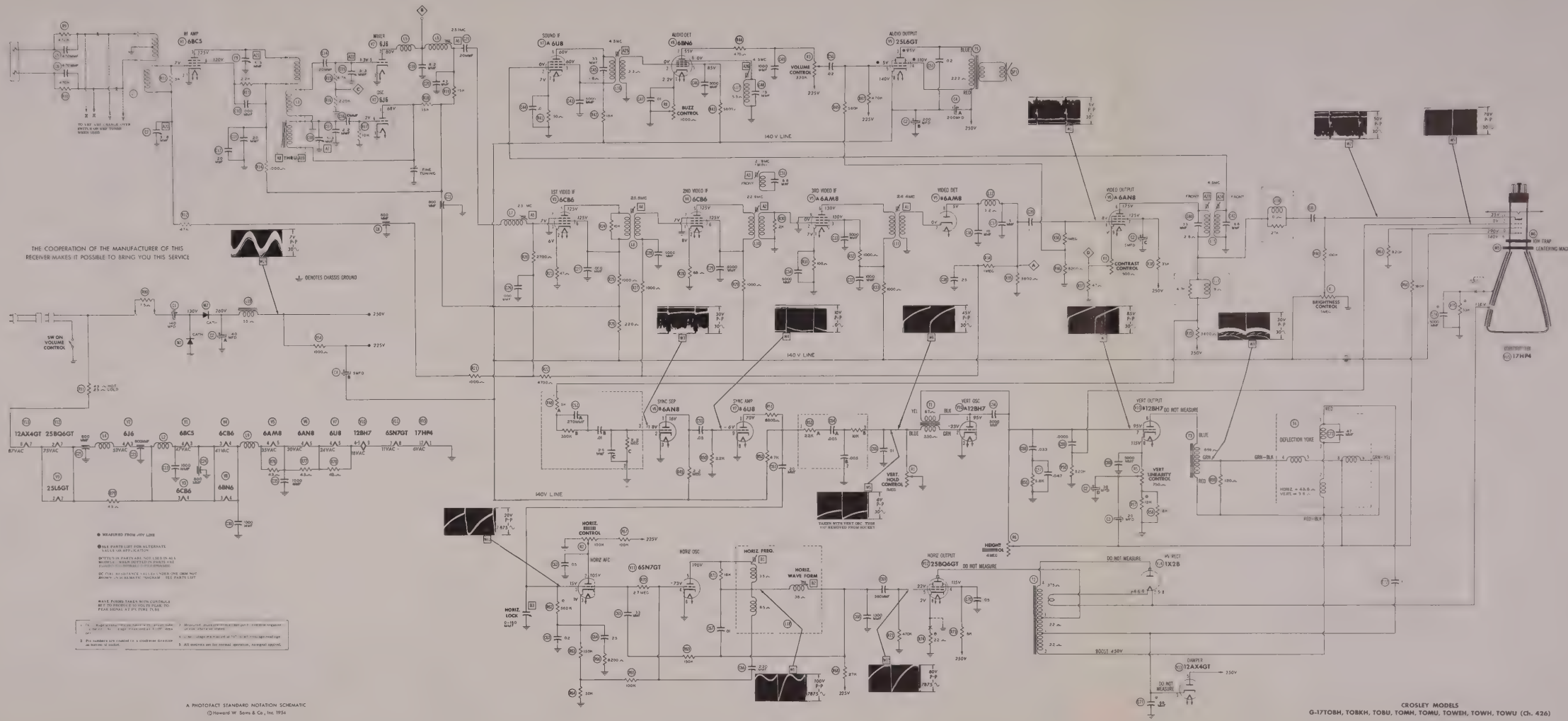
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
DENOTES CHASSIS GROUND
SW ON VOLUME CONTROL
12AX4GT 25BQ6GT 6J6 6BC5 6CB6 6AM8 6AN8 6U8 12BH7 6SN7GT 17HP4
25L6GT 6CB6 6BN6
RF AMP V1 6BC5
MIXER V2 6J8
OSC V3 6J5
SOUND IF V17 A 6U8
AUDIO DET V8 6BN6
AUDIO OUTPUT V9 25L6GT
1ST VIDEO IF V5 6CB6
2ND VIDEO IF V6 6CB6
3RD VIDEO IF V7 A 6AM8
VIDEO DET V8 6AM8
VIDEO OUTPUT V10 A 6AN8
SYNC SEP V6 6AN8
SYNC AMP V7 6U8
VERT OSC V10 A 12BH7
VERT OUTPUT V10 12BH7 DO NOT MEASURE
HORIZ OSC V11 6SN7GT
HORIZ OUTPUT V12 25BQ6GT DO NOT MEASURE
HV RECT V14 1X2B
DAMPER V13 12AX4GT
140 V LINE
BUZZ CONTROL
VOLUME CONTROL
CONTRAST CONTROL
BRIGHTNESS CONTROL
VERT LINEARITY CONTROL
VERT. HOLD CONTROL
HORIZ. HOLD CONTROL
HORIZ. FREQ.
HORIZ. WAVE FORM
HEIGHT
DEFLECTION YOKE
ION TRAP
CENTERING MAGNET
CRT V16 17HP4
BOOST 450V
DO NOT MEASURE
TAKEN WITH VERT OSC TUBE V10 REMOVED FROM SOCKET
MEASURED FROM -105V LINE
SEE PARTS LIST FOR ALTERNATE VALUES ON APPLICATION
DOTTED IN PARTS ARE NOT USED IN ALL MODELS. WHEN NOTED IN PARTS LIST
DC VOLTAGE READINGS VALID UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM - SEE PARTS LIST
WAVE FORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK TO PEAK SIGNAL AT PIX TUBE GRID
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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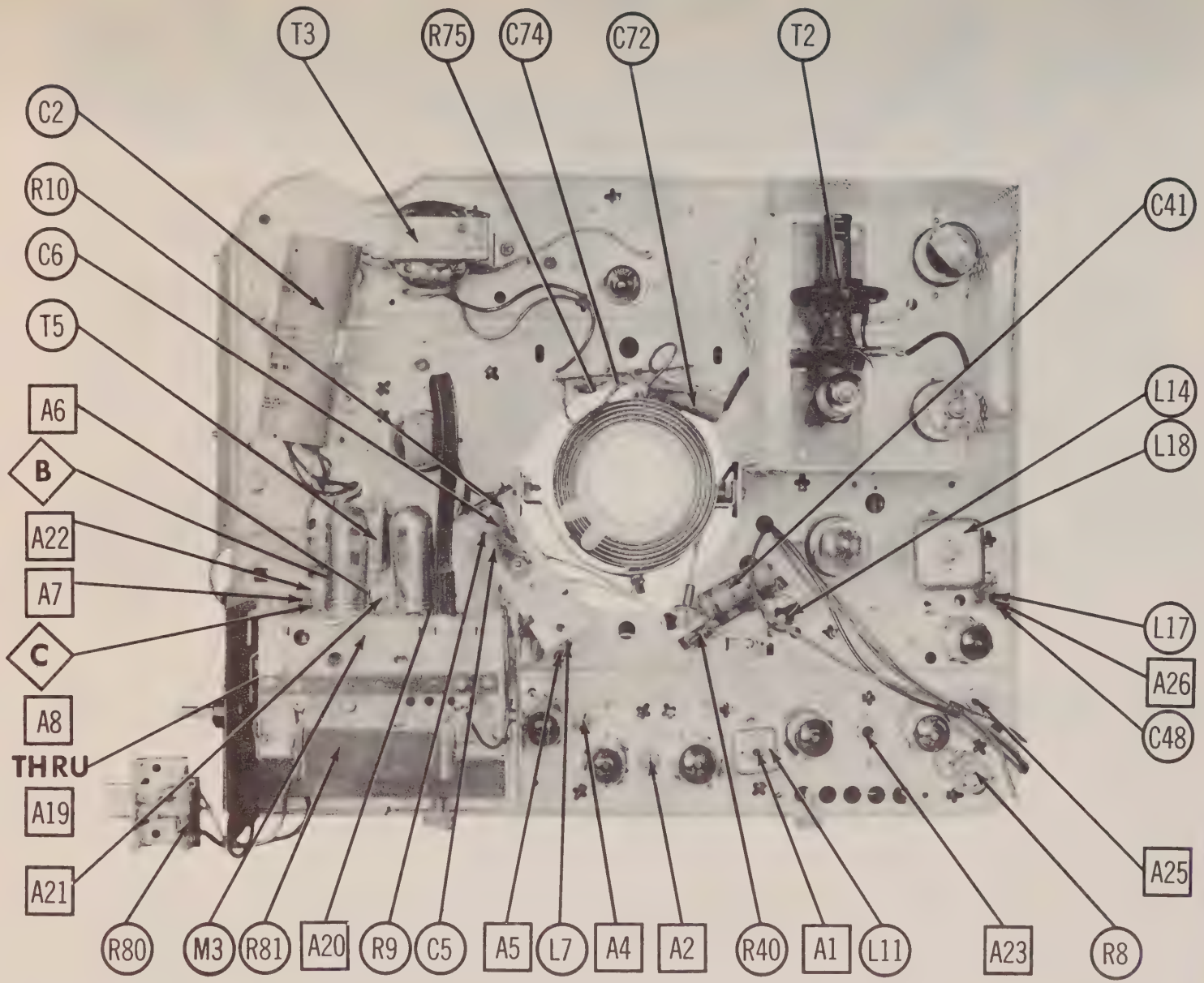
CROSLEY MODELS
G-17TOBH, TOBKH, TOBU, TOMH, TOMU, TOWEH, TOWH, TOWU (Ch. 426)



CHASSIS TOP VIEW

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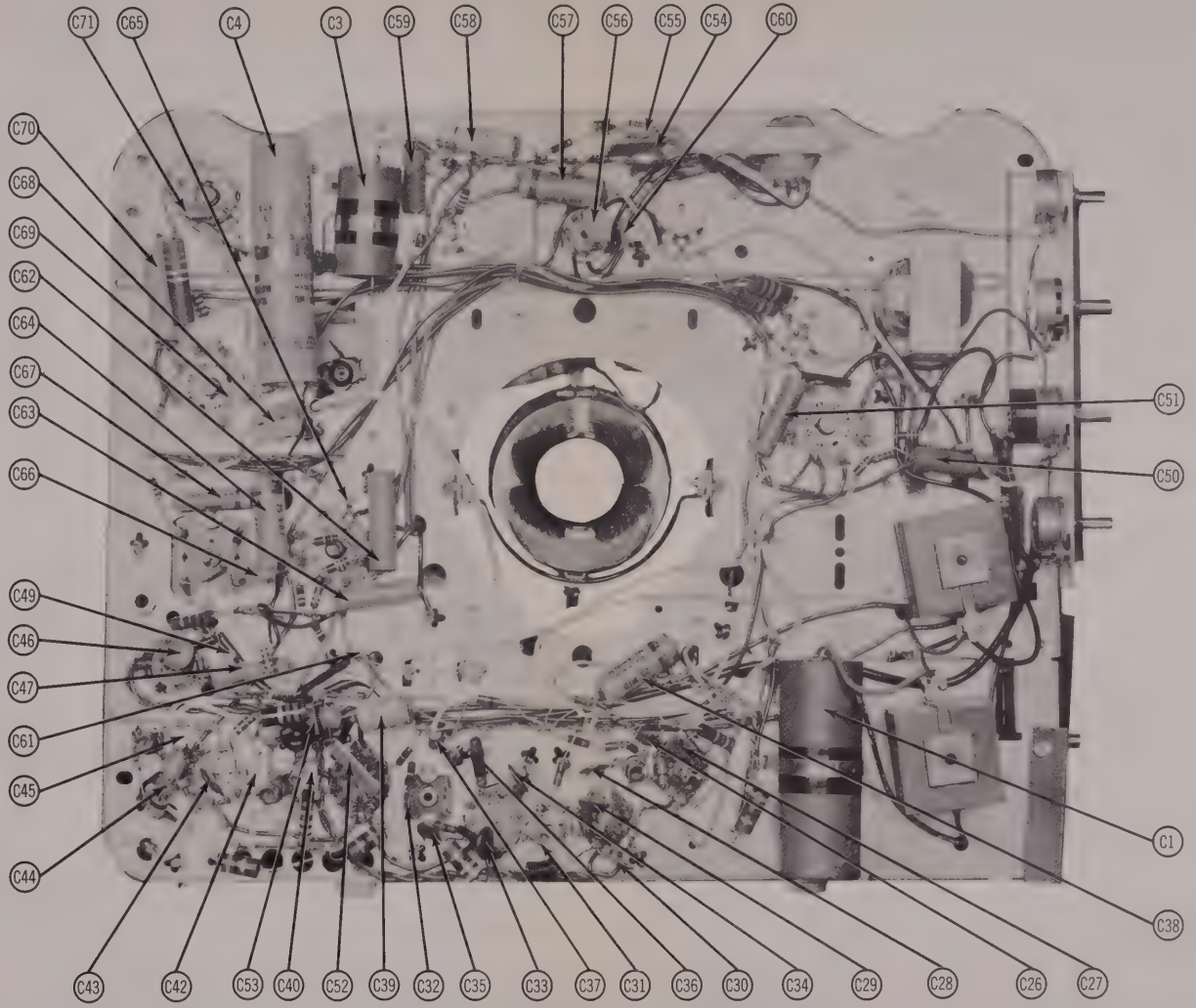

CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

TUBE PLACEMENT CHART

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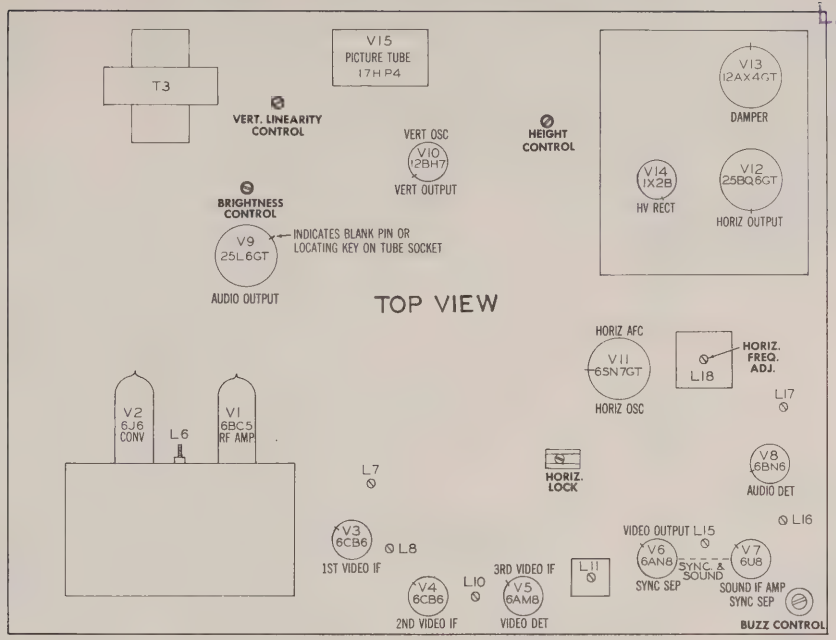


TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

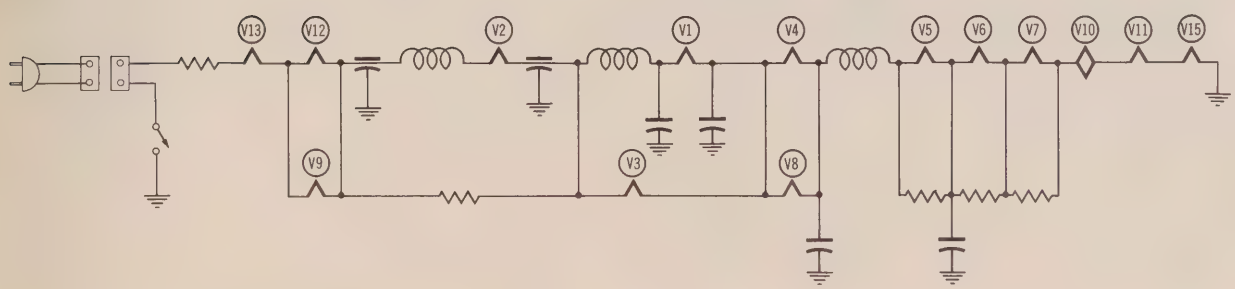
POWER SUPPLY FAILURE
No raster, no sound - **Selenium Rectifiers (M1 & M2)**

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - **V2, V3, V4, V5, V9**
No pic, no sound, has snow - **V1, V2, V3**
No pic, has sound, has raster - **V6, V15**
Has pic, no sound - **V7, V8, V9**

SYNC FAILURE
No vert. sync - **V7, V10**
No horiz. sync - **V7, V11**
No vert. or horiz. sync - **V6, V7**

SWEEP FAILURE
No raster, has sound - **V11, V12, V13, V14, V15**
No vertical deflection - **V10**
Poor vert. linearity or foldover - **V10**
Poor horiz. linearity or foldover - **V11, V12, V13**
Narrow picture - **V11, V12, V13, V14, M1, M2**
Vert. off freq. - **V7, V10**
Horiz. off freq. -**V7, V11**

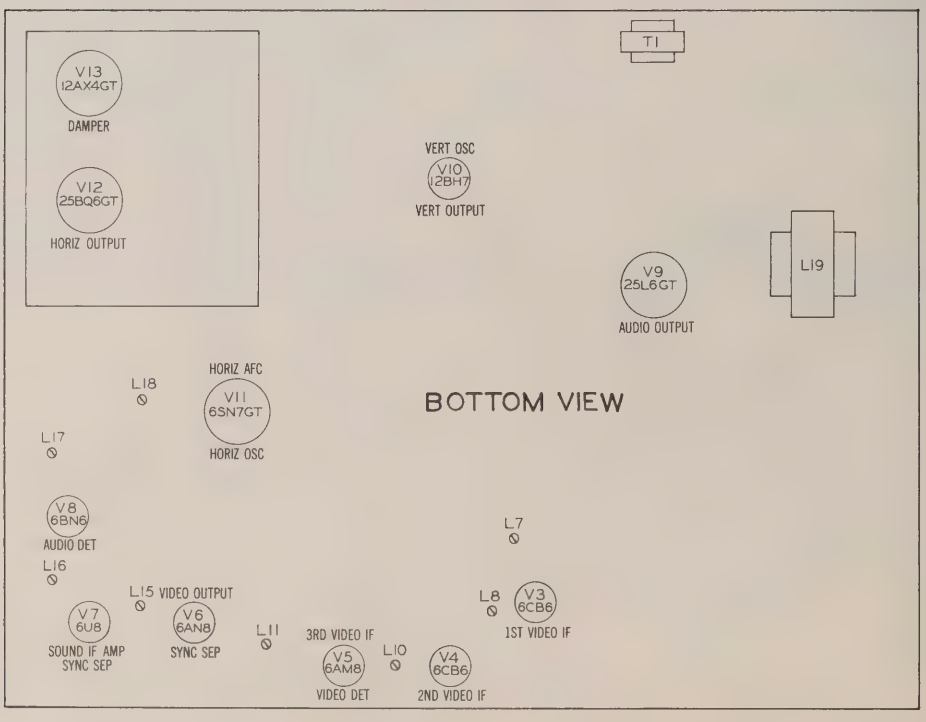
NOTE: Since this receiver employs tubes used in a series-parallel filament network, an open filament in any tube in series may cause the set to be inoperative. (See circuit below).



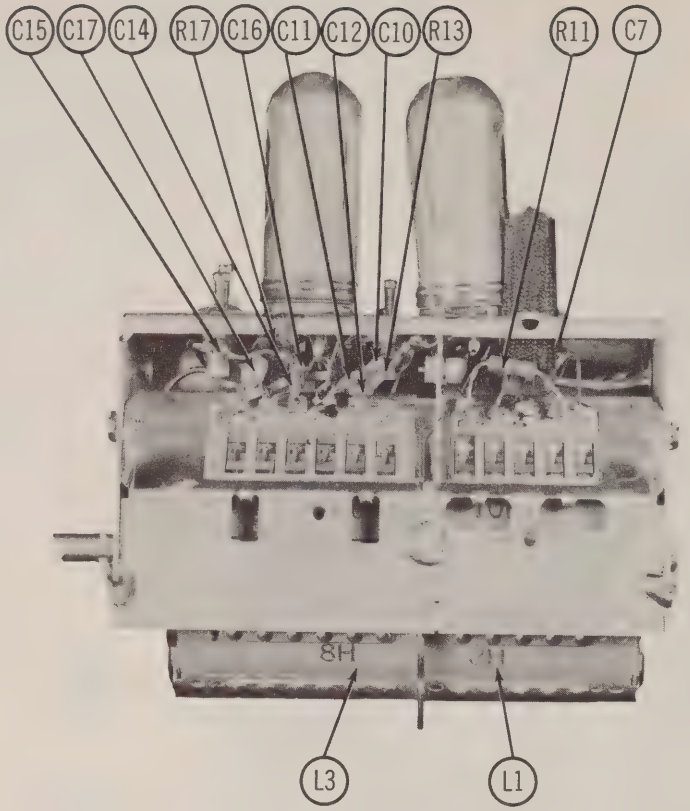
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BC5	1.1Meg	0Ω	13Ω	15Ω	♦1.2KΩ	♦3.4KΩ	0Ω		
V 2	6J6	♦15.2KΩ	♦15.2KΩ	15Ω	19Ω	225KΩ	10KΩ	0Ω		
V 3	6CB6	1Meg	47Ω	15Ω	13Ω	1.2KΩ	1.2KΩ	0Ω		
V 4	6CB6	1Meg	68Ω	13Ω	11Ω	♦1KΩ	♦1KΩ	0Ω		
V 5	6AM8	100Ω	.4Ω	♦2KΩ	11Ω	9Ω	♦1KΩ	.4Ω	5.6KΩ	0Ω
V 6	6AN8	♦2.2Meg	2.2Meg	0Ω	9Ω	7Ω	†5.7KΩ	†33KΩ	1Meg	60Ω
V 7	6U8	♦11.4KΩ	1Ω	♦18KΩ	7Ω	5Ω	♦18KΩ	150Ω	0Ω	22KΩ
V 8	6BN6	220Ω	3.3Ω	13Ω	11Ω	♦5.6KΩ	5.5Ω	†330KΩ		
V 9	25L6GT	INF	20Ω	†280Ω	†55Ω	†420KΩ	8.2KΩ	15Ω	100KΩ	
V 10	12BH7	▲3Meg	780KΩ	0Ω	5Ω	5Ω	▲1KΩ	▲3Meg	8.4KΩ	3Ω
V 11	6SN7GT	860KΩ	†160KΩ	300KΩ	250KΩ	†28KΩ	0Ω	3Ω	1Ω	
V 12	25BQ6GT	INF	20Ω	†1KΩ	†18KΩ	470KΩ	INF	15Ω	22Ω	TOP CAP ▲22Ω
V 13	12AX4GT	INF	INF	450KΩ	INF	†55Ω	0Ω	20Ω	22Ω	
V 14	1X2B		PINS	1 - 8	HAVE	INF	RESISTANCE			TOP CAP ▲400Ω
V 15	17HP4	0Ω	820KΩ	PIN 6 ♦0Ω	PIN 10 ▲350KΩ	PIN 11 ♦550KΩ	PIN 12 1Ω			

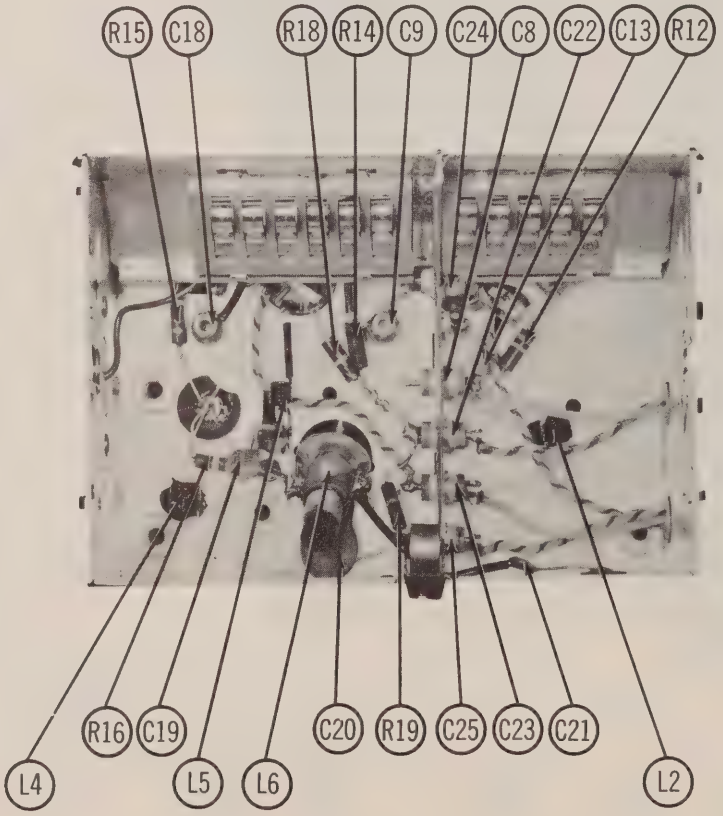
♦ MEASURED FROM 140V LINE
† MEASURED FROM OUTPUT OF M1
▲ MEASURED FROM PIN 3 OF V13



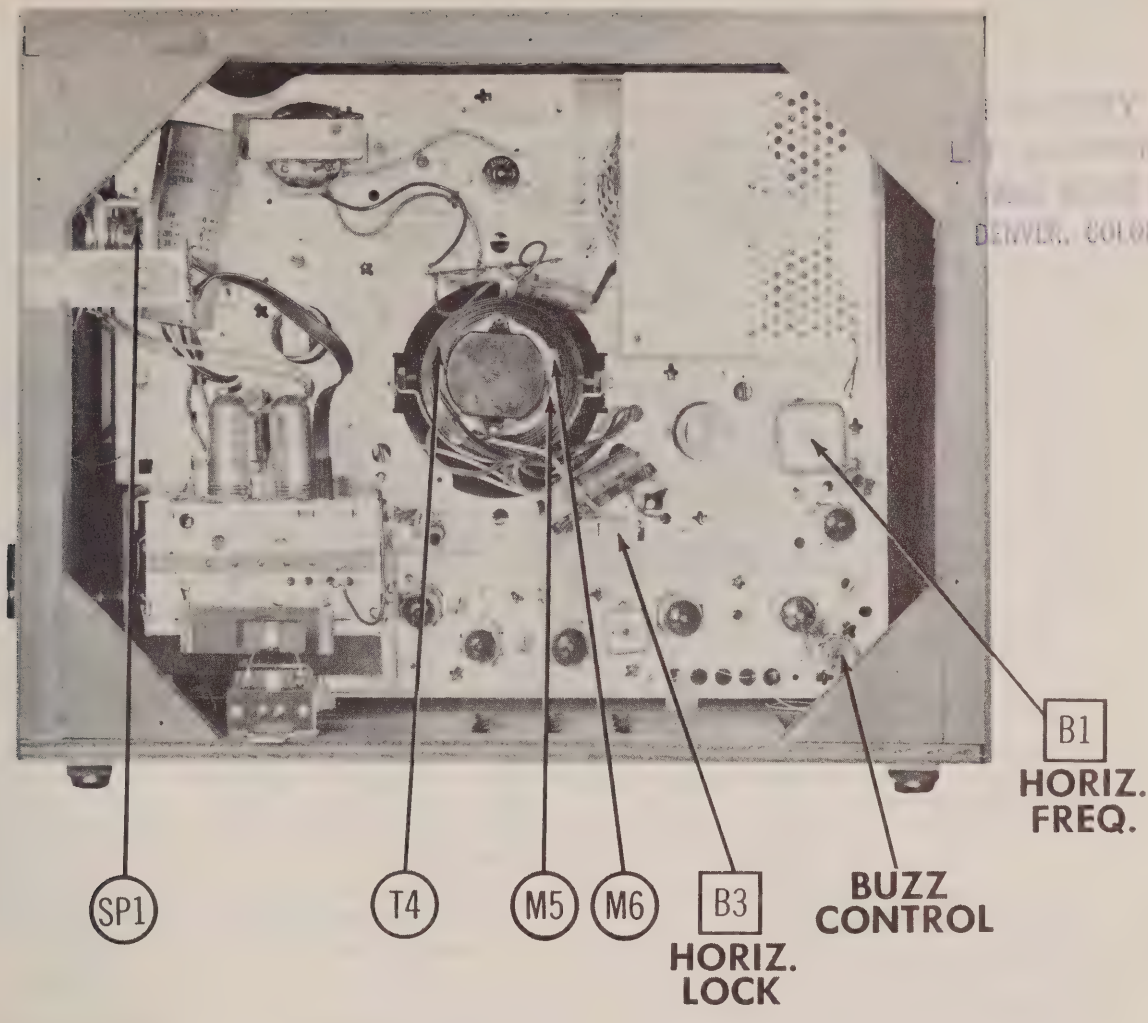
TUBE PLACEMENT CHART



RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern. Set the contrast control for normal contrast.

1. Set the horizontal hold control to its mid-range position and adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally.
2. Connect the vertical amplifier of an oscilloscope thru 10MMF to lug 4 of L18. Connect the low side to chassis. Adjust the horizontal waveform slug (B2) until waveform similar to Fig. 5 is obtained. While making this adjustment keep the picture in sync with the horizontal hold and if necessary, B1 and the horizontal lock trimmer (B3).
3. Turn the horizontal hold control fully clockwise. Turn B1 counter clockwise until the picture just loses sync, then turn B1 clockwise until picture is just ready to pull into sync.
4. Turn the horizontal hold control fully counter clockwise. Picture should remain in sync. Momentarily remove the signal by switching off channel and back again. If more than 7 diagonal bars are present, adjust the horizontal lock trimmer (B3) slightly counter clockwise until 3 or 4 bars appear when switching off channel and back again. If less than 3 bars are present when switching off channel and back again adjust B3 slightly clockwise and check by switching off channel and back again. Repeat steps 3 and 4 until the effective pull-in range of the horizontal hold control is from 60 to 120 degrees.

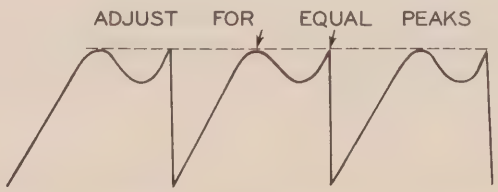


FIG. 5

TROUBLE SHOOTING AIDS

SWEEP

HORIZONTAL

LOSS OF SWEEP

Follow procedure outlined under "Loss of High Voltage".

INSUFFICIENT SWEEP

Check by substitution V11, V12 and V13. Check M1 and M2. Check waveform W12.

If Satisfactory	If Unsatisfactory
Check T2, T4A, C72, R73 and other associated components.	Check C69, C65, R69 and other associated components.

DRIVE LINES

Check by substitution V12 and V13. Check C68, C70, R72 and other associated components.

COMPRESSED LEFT SIDE

Check by substitution V11, V12 and V13. Check components associated with the horizontal output and damper stages especially T2 and T4A.

FOLDS

Follow procedure outlined under "Drive Lines".

PIE CRUST EFFECT

Check by substitution V11, V12 and V13. Check T2, and T4A for internal arcing. Check L18, C63, C67 and other associated components.

XMAS TREE EFFECT

Check by substitution V11, V12 and V13. Check C67, C65, C62, R71, R66 and other associated components.

VERTICAL

LOSS OF SWEEP

Check by substitution V10. Check waveform W7.

If Satisfactory	If Unsatisfactory
Check T3, T4B, C60 and other associated components.	Check T1, R6 and other associated components.

INSUFFICIENT SWEEP

Substitute V10. Check height and vertical linearity controls for proper adjustment. Check C2D, C3, R58, R57 and other associated components.

COMPRESSED AT BOTTOM

Substitute V10. Check T1, C57, C58, R55 and other associated components.

COMPRESSED AT TOP

Substitute V10. Check R5, R58, R57, C2D, C3, C60, T3, T4B and other associated components.

FOLDS

Substitute V10. Check C2D, C3, T3, T4D and other associated components.

SYNC

LOSS OF VERTICAL AND HORIZONTAL SYNC

Check by substitution V6 and V7. Check C52-R48, C53, R52, R51, R49 and other associated components.

LOSS OF VERTICAL SYNC-HORIZONTAL SYNC SATISFACTORY

Substitute V7. Check waveform W6.

If Satisfactory	If Unsatisfactory
Check T2, R1 and other associated components.	Check vertical integrator and other associated components. Check IF stages for overloading.

LOSS OF HORIZONTAL SYNC-VERTICAL SYNC SATISFACTORY

Check by substitution V6 and V11. Check waveform W10.

If Satisfactory	If Unsatisfactory
Check components associated with V11, especially L18, C62 and C66.	Check C61, C53, R51, R52 and other associated components.

HORIZONTAL BENDING

Check by substitution V6, V7 and V11. Check horizontal AFC network for component failure or change of value.

VIDEO

LOSS OF VIDEO

Substitute V6. Check coupling network to picture tube. Check picture tube and other components associated with V6.

SOUND BARS (4.5MC BEAT)

Adjust tuner fine tuning for best sound and picture. Check adjustment A23 and video IF alignment.

POOR CONTRAST

Substitute V6. Check video detector network. Check contrast control, picture tube and other associated components.

NEGATIVE PICTURE

Check by substitution V3, V4, V5 and V6. Check video detector network. Check picture tube.

SMEAR

Substitute V6. Check L15, L13, L14, C40, C41 and other associated component.

WIDE BLACK BAR ACROSS PICTURE

Check V1, V2, V3, V4, V5 and V6 for heater to cathode leakage.

AUDIO

WEAK OR NO SOUND

Check by substitution V7, V8 and V9. Check R42, R43, R45, R44, R47, C51, C50, C49, C43, T5, speaker and other associated components.

BUZZ

Adjust tuner fine tuning for best sound and picture. Adjust R8 and A26 for minimum buzz. Check alignment of audio IF stages.

DISTORTED

Follow procedure outlined under "Weak or No Sound".

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3924 MEADE ST.
DENVER, COLORADO

The following changes have been incorporated in later production chassis 426:

1. R76, R77 and R78, filament shunt resistors (43Ω, 2 watt), are replaced by a 126Ω, 10 watt resistor, part #158230. The change in the schematic is given in Fig. 1. Chassis 426 incorporating this change are stamped with code letter F or later.

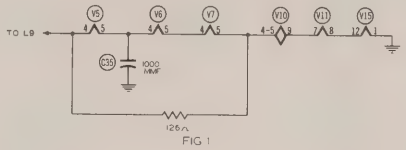


FIG 1

2. On chassis 426 (Code letter D or later), R8 is a 500Ω control, part #157955-2. Chassis with earlier code letters have 1000Ω control, part #157955-1. The change simplifies the sound alignment. When adjust the buzz control for a null, the low value resistance makes it easier to find the null.

3. On chassis 426 (Code letter D or later), a wiring change was made in the vertical circuit to avoid excessive height by reducing the plate voltage on V10 (vertical oscillator tube). However, no parts were added or deleted. The change on the schematic is shown in Fig. 2.

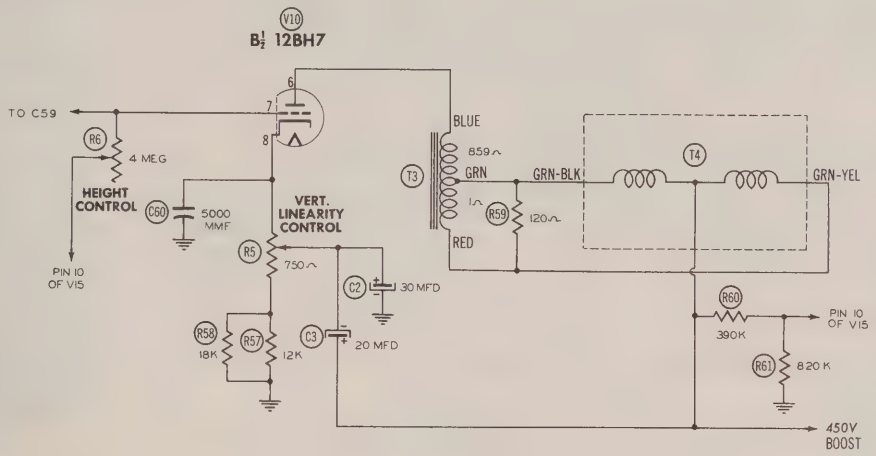


FIG 2

If it is desired to make this change on earlier chassis, remove the red lead wire between the positive terminal of the electrolytic capacitor C3 and lug 2 of the height control. Then connect a length of hook-up wire from positive terminal of C3 to the junction of R60 and R61 (on the terminal board directly above the height control).

NOTE: On some chassis which did incorporate the above change, a 1Meg, ½ watt resistor (part #39374-61) have been inserted between lug 3 of the height control (R6) and the grid (pin 7) of the V10. Since this is not used on all chassis, no code letter was assigned. The 1Meg resistor compensates for the low overall resistance value of the control when that resistance approaches 4Meg (lower limit at 20% tolerance). When installing a replacement control which has a similar low overall resistance, either of the above methods may be used to decrease the height of the picture.

4. On later production chassis a 33,000Ω, 1 watt resistor (part #39374-131) is wired between the rear picture tube support bracket and a soldering lug under the head of one of the screws holding the bracket to the chassis. This does not effect the operation of the receiver, therefore, no code letter was assigned. The purpose was to provide a leakage path in case the anode lead should become disconnected from the picture tube bell and come in contact with the bracket while the set was turned on. Without such a path, the high voltage could break down the insulation ability of the nylon grommets. This would leave a permanent leakage path between the chassis and bracket, thus making the bracket "hot".

5. To improve vertical interlace on later production chassis, a 5000MMF, 1000V disc ceramic capacitor (part #158215-4 is connected in parallel to the 33,000 ohms resistor referred to in the paragraph above. The chassis code letter was not changed when this capacitor was added. The capacitor bypasses stray AC potentials on the bracket, which were found to be disturbing vertical interlace in some sets.

If it is desired to improve the interlace on earlier production sets, the capacitor may be added by connecting it in the same manner as described for the 33,000Ω resistor above.

6. As a temporary substitution in some chassis, R22 is a 3900Ω, ½ watt resistor (part #39374-32) instead of the 4700Ω, ½ watt resistor (part #39374-33), shown in the schematic parts list.

A similar substitution was made for C71 by using three 22MMF, 2000V capacitor (part #157811-1) in place of one 68MMF, 3000V capacitor (part #158215-3) as shown in the schematic and parts list.

A third temporary substitution was made for R37 using a 56Ω, ½ watt resistor (part #39374-10) in place of the 47Ω, ½ watt resistor (part #39374-9) as shown in the schematic and parts list.

7. Delete from the cabinet replacement parts list for Models G-17TOMU, G-17TOBU and G-17TOWU, part # 157754-2 (knob, UHF fine tuning) and add part #158359-1. The UHF channel selector and fine tuning knobs were designed to rotate at different speeds. However, on sets with the earlier fine tuning knobs, both knobs could be grasped and forced to turn at the same speed. The slack resulting from this improper operation caused the dial string to jump off the pulleys. The possibility of such improper use of the controls is eliminated with the use of the new fine tuning knob, which has a wide enough flange to project over the entire rim of the channel selector knob. The channel numbers on the channel selector knob remain clearly visible thru the transparent plastic flange.

Delete from the replacement parts list for chassis 426 (UHF models only) the part #154736 for bracket, idler pulley and add in its place part #158334-1, bracket, idler pulley.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No	USE	REPLACEMENT DATA: CROSLEY PART No.	STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	RF Amplifier	6BC5	6BC5	7BD	
V2	Converter	6J6	6J6	7BF	
V3	1st. Video IF Amp.	6CB6	6CB6	7CM	
V4	2nd. Video IF Amp.	6CB6	6CB6	7CM	
V5	3rd. Video IF Amp. +Video Detector	6AM8	6AM8	9CY	
V6	Video Output- Sync Separator	6AN8	6AN8	9DA	
V7	Sound IF Amp.- Sync Amplifier	6U8	6U8	9AE	
V8	Audio Detector	6BH6	6BH6	7DF	
V9	Audio Output	25L6GT	25L6GT	7S	
V10	Vert. Oscillator- Vert. Output	12BH7	12BH7	8A	
V11	Horiz. AFC- Horiz. Oscillator	6SN7GT	6SN7GT	8BD	
V12	Horiz. Output	25BQ6GT	25BQ6GT	8AM	
V13	Damper	12AX4GT	12AX4GT	4CG	
V14	HV Rectifier	1X2B	1X2B	8Y	

CATHODE-RAY TUBE

ITEM No	REPLACEMENT DATA: CROSLEY PART No	CBS HYTRON PART No	GENERAL ELECTRIC PART No	SYLVANIA PART No	WESTINGHOUSE PART No	RETMA BASE TYPE	NOTES
V15	17HP4	17HP4	17HP4 /17HP4	17HP4 17MP4	17HP4	12L 12L	

CAPACITORS

Capacity values given in this rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	VOLT	REPLACEMENT DATA: CROSLEY PART No.	AEROVOX PART No	CENTRALAB PART No	CORNELL-DUBILIER PART No	ERIE PART No	MALLORY PART No	SPRAGUE PART No	NOTES
C1	140	300	157837-1	AFH-37			D328	FP218	TVL-2584	
C2A	140	300	157838-1	AFH-37					TVL-4563	Red
B	200	150								Green
C	5	150								Blue
D	30	150								Yellow
C3	20	450	157803-1	PRS450/20		BR2045		TC75	TVA-1709	
C4A	200	150	157836-1	AFH32-109		B078		FP216 1	TVL-2444	Red
B	5	150								Yellow
C5	470	2000	156201-1	HVD30-00047			3KV-471		30GA-T47	
C6	470	2000	156201-1	HVD30-00047			3KV-471		30GA-T47	
C7	3-8		156906-16		829-10					
C8	800		156105-8							
C9	.5-3		156906-5		829-3		3U5-01-0R5	CT56SA		
C10	1000		158103-1	BPD-001	DD-102	K069	80L-001	DC-521	5HK-D1	
C11	120		158103-3	BPD-00012	D6-121	G044	GP2K-121	UC-5312	5GA-T12	
C12	120		158103-3	BPD-00012	D6-121	G044	GP2K-121	UC-5312	5GA-T12	
C13	1000		158103-1	BPD-001	DD-102	K069	80L-001	DC-521	5HK-D1	
C14	120		158103-3	BPD-00012	D6-121	G044	GP2K-121	UC-5312	5GA-T12	
C15	.5-3		156906-5		829-3		3U5-01-0R5	CT56SA		
C16	10		158106-5							
C17	2.2		158106-5	SH2.2NP0	TCZ-2.2	2066	NP0K-2R2		5TCCB-V22	
C18	.5-3		156906-5		829-3		3U5-01-0R5	CT56SA		
C19	8.2		158106-5	SH8.2NP0	TCZ-8.2	2016	NP0K-8R2		5TCCB-V82	
C20	43		158106-16							
C21	120		158103-3	BPD-00012	D6-121	G044	GP2K-121	UC-5312	5GA-T12	
C22	800		158106-8							
C23	800		158106-8							
C24	800		158106-8							
C25	800		158106-8							
C26	1000		144675-14	BPD-001	DD-102	K069	80L-001	DC-521	5HK-D1	
C27	1000		144675-14	BPD-001	DD-102	K069	80L-001	DC-521	5HK-D1	
C28	5000		144675-2	BPD-005	DD-502	K080	81L-005	DC-525	5HK-D5	
C29	5000		144675-2	BPD-005	DD-502	K080	81L-005	DC-525	5HK-D5	
C30	1000		144675-14	BPD-001	DD-102	K069	80L-001	DC-521	5HK-D1	
C31	68	500	157499-33	1S69-00007		1S1EQ68				
C32	1000		144675-14	BPD-001	DD-102	K069	80L-001	DC-521	5HK-D1	
C33	5000		144675-2	BPD-005	DD-502	K080	81L-005	DC-525	5HK-D5	
C34	5000		144675-2	BPD-005	DD-502	K080	81L-005	DC-525	5HK-D5	
C35	1000		144675-14	BPD-001	DD-102	K069	80L-001	DC-521	5HK-D1	
C36	10		157727-125	S10N080			N080K-100			
C37	5		157727-103	S05	D6-050	TP05	GP1K-050	ZT-555	5GA-V5	
C38	.25	25	157810-1	P288-25		CUBP25		PT4025	2TM-P25	
C39	.1	150	156906-1	P288-1	DF-104	CUBP1		PT401	2TM-P1	
C40	33		157727-126	S33N080			N080L-330			
C41	.1	400	29478-47	P488-1	DF-104	CUB4P1		PT401	4TM-P1	
C42	68		157727-123	S68N0S0			N080-337-080			
C43	5000		144675-2	BPD-005	DD-502	K080	81L-005	DC-525	5HK-D5	
C44	.01	200	29478-41	P488-01	D6-103	CUB4E1	GP2-103-103	PT4U1	4TM-E1	
C45	33		157727-125	S33N080			N080L-330			
C46	5000		144675-2	BPD-005	DD-502	K080	81L-005	DC-525	5HK-D5	
C47	.01	300	29478-41	P488-01	D6-103	CUB4E1	GP2-353-103	PT4U1	4TM-E1	
C48	15		157727-43	S15N080			N080K-150			
C49	1000		144675-14	BPD-001	DD-102	K069	80L-001	DC-521	5HK-D1	
C50	.02	200	29288-02	P288-02	DF-203	CUB2E2	81T-02	PT4U2	2TM-E2	
C51	.02	200	29001-80	P288-02	DF-203	CUB2E2	81T-02	PT4U2	2TM-E2	
C52A	270						TP4I	GP2K-271	UC-5327	
B	.01		‡157813-1	†PA-228	TPC-260		K082	81J-01	DC-511	‡103C17
C	25						GP1K-250		UC-5425	
C53	.05	200	29001-17	P288-05	DF-503		CUB2E5		PT4U5	2TM-S5
C54A	.005		‡157812-1	♦PA-231	DD-502	K080	81L-005	DC-525	5HK-D5	
B	.005				DD-502	K080	81L-005	DC-525	5HK-D5	
C55	.01	400	29478-41	P488-01	D6-103	CUB4E1	GP2-103-103	PT4U1	4TM-E1	
C56	5000		144675-2	BPD-005	DD-502	K080	81L-005	DC-525	5HK-D5	
C57	.047	400	29477-45	P488-047	DF-503	CUB4S7		PT4U7	4TM-S7	
C58	.033	400	29477-43							
C59	.0005	600	29001-5	P685-0005		CUB5T5		TP403	5TM-T5	
C60	5000		144675-2	BPD-005	DD-502	K080	81L-005	DC-525	5HK-D5	
C61	20		157727-81				N330K-300			
C62	.05	400	29001-17	P488-05	DF-503	CUB4S5		PT4U5	4TM-S5	
C63	.02	200	29001-80	P288-02	DF-203	CUB2E2	81T-02	PT4U2	2TM-S2	

CAPACITORS (cont)

ITEM No	RATING: CAP.	VOLT	REPLACEMENT DATA: CROSLEY PART No.	AEROVOX PART No	CENTRALAB PART No	CORNELL-DUBILIER PART No	ERIE PART No	MALLORY PART No	SPRAGUE PART No	NOTES
C64	.25	25	157810-1	P288-25		CUB2P25		PT4025	2TM-P25	
C65	33		157727-125	S33N080			N080K-330			
C66	220	500	157498-22			2SR5I22				
C67	.01	400	148413-2							
C68	1500	500	157498-77			1SD5I5				
C69	560		157499-34	S1560	D6-561	G063	GP2K-561	UC-5356	5GA-T56	
C70	.05	400	29001-17	P488-05	DF-503	CUB4S5		PT415	4TM-S5	
C71	68	3000	158218-3	HVD30-000088			3KV-680		30GA-Q68	Note 1
C72	.1	200	29478-47	P288-1	DF-104	CUB2P1		PT401	2TM-P1	
C73	.47	2000	154311-1	HVD30-00004			3KV-470		30GA-Q47	
C74	5000	2000	144675-2							Note 2

† Items C52A, C52B, C52C, R48A, R48B, R48C are combined in one unit.
♦ Items C54A, C54B, R53A, R53B are combined in one unit.
Note 1. Some models use 22MMF or two 22MMF in this application (part #157811-1).
Note 2. Not used in all models.

CONTROLS

ITEM No.	RATING: RESISTANCE	WATTS	REPLACEMENT DATA: CROSLEY PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1 Meg with 350KΩ stop	½	B-157803-1-1	Q11-136	A47-1 Meg-S	B-59	U-54	Vert. Hold- Note 1
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Not Req.	Attach to R1A
R2A	100KΩ with 70KΩ stop	½	B-157802-1-2	Q11-125	A47-100K-S	B-40	U-41	Horiz. Hold-Note 2
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Not Req.	Attach to R2A
R3A	350KΩ	½	B157803-1-1	Q11-132	A47-350K-S	B-51	U-49	Volume
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Not Req.	Attach to R3B
C	Switch		Not Req.	76-1	SWE-12	Not Req.	US-26	Attach to R3B
R4A	1500Ω	½	B157804-1-1	Q1T-109	A47-2000-S	AB-515	U-5	Contrast
B	Shaft		Not Req.	Not Req.	RS-2	AK-1	Not Req.	Attach to R4A
R5A	150Ω	½	B157800-1-1	Q11-103	A47-1000-S	AB-5		Vert. Linearity
B	Shaft		Not Req.	Not Req.	RS8-3	AK-1		Attach to R5A
R6A	1 Meg with 1 Meg stop	½	B157806-1-1	Q11-141	A47-5Meg-S	AB 06	3U-87	Height - Note 3
B	Shaft		Not Req.	SQ	FKS-1/4	AK-1	Not Req.	Attach to R6A
R7A	5 Meg	½	B157801-1-1	Q1T-141	A47-5 Meg-S		U-87	Brightness
B	Shaft		Not Req.	Not Req.	RS8-3		Not Req.	Attach to R7A
R8	100Ω	1	157825		3P-100			Buzz - wire wound

Note 1. Connect a 360KΩ resistor in series with the right hand terminal of the control and the lead connecting to the same terminal of the original control. (Control viewed from shaft end, terminals down)
Note 2. Connect a 68KΩ resistor in series with the left hand terminal of the control and the lead connecting to the same terminal of the original control. (Control viewed from shaft end, terminals down)
Note 3. Connect a 1 Meg resistor in series with the left hand terminal of the control and the lead connecting to the same terminal of the original control. (Control viewed from shaft end, terminals down)

RESISTORS

ITEM No	RATING: OHMS	WATTS	REPLACEMENT DATA: CROSLEY PART No	IRC PART No	NOTES
R9	470KΩ	½		BTS-470K	
R10	470KΩ	2		BTS-470K	
R11	15KΩ	½		BTS-15K	
R12	47KΩ	½		BTS-47K	
R13	2200Ω	½		BTS-2200	
R14	1000Ω	½		BTS-1000	
R15	4700Ω	½		BTS-4700	
R16	220KΩ	½		BTS-220K	
R17	10KΩ	½		BTS-10K	
R18	15KΩ	½		BTS-15K	
R19	15KΩ	1		BTS-15K	
R20	2700Ω	1	33574-30	BTA-2700	
R21	1000Ω	½	33574-25	BTS-1000	
R22	4700Ω	½	33574-53	BTS-4700	
R23	47Ω	½	33574-9	BTS-47	
R24	10KΩ	½	33574-37	BTS-10K	
R25	1000Ω	½	33574-25	BTS-1000	
R26	220Ω	½	33574-53	BTS-220	
R27	1000Ω	½	33574-25	BTS-1000	
R28	68Ω	½	33574-11	BTS-68	
R29	1000Ω	½	33574-25	BTS-1000	
R30	12KΩ	½	33574-35	BTS-12K	
R31	100Ω	½	33574-13	BTS-100	
R32	1000Ω	½	33574-25	BTS-1000	
R33	1000Ω	½	33574-25	BTS-1000	
R34	1 Meg	½	33574-61	BTS-1 Meg	
R35	5600Ω	½	33574-34	BTS-5600	
R36	1 Meg	½	33574-61	BTS-1 Meg	
R37	47Ω	½	33574-9	BTS-47	
R38	33KΩ	½	33574-151	BTA-33K	
R39	5600Ω	2	33574-210		
R40	100KΩ	½	33574-49	BTS-100K	
R41	150Ω	½	33574-15	BTS-150	
R42	18KΩ	½	33574-40	BTS-18K	
R43	5600Ω	1	33574-122	BTA-5600	
R44	47Ω	½	33574-57	BTS-470	
R45	560KΩ	½	33574-58	BTS-560K	
R46	82000Ω	½	33574-36	BTS-8200	

ITEM No.	RATING: OHMS	WATTS	REPLACEMENT DATA: CROSLEY PART No	IRC PART No	NOTES
R47	470KΩ	½	33574-57	BTS-470K	
R48A	10KΩ	1	‡ 157813-1	BTS-10K	
B	330KΩ	½		BTS-330K	
C	2.2 Meg	½		BTS-2.2 Meg	
R49	2.2 Meg	½	33574-65	BTS-2.2 Meg	
R50	22KΩ	½	33574-41	BTS-22K	
R51	6800Ω	½	33574-33	BTS-6800	
R52	4700Ω	½	33574-33	BTS-4700	
R53A	22KΩ	1	♦ 157812-1	BTS-22K	
B	10KΩ	½		BTS-10K	
R54	10000Ω	½	33574-25	BTS-1000	
R55	39000Ω	½	33574-34	BTS 5000	
R56	820KΩ	½	33574-60	BTS-820K	
R57	13KΩ	2		BTB-13K	Note 1
R58	18KΩ	2		BTB-18K	
R59	120Ω	½	33574-14	BTS-120	
R60	390KΩ	½	33574-56	BTS-390K	
R61	820KΩ	½	33574-60	BTS-820K	
R62	560KΩ	½		BTS-560K	Note 2
R63	150KΩ	½	33574-51	BTS-150K	
R64	150KΩ	½	33574-51	BTS-150K	
R65	100KΩ	½	33574-49	BTS-100K	
R66	8200Ω	½	33574-36	BTS-8200	
R67	100KΩ	½	33574-49	BTS-100K	
R68	27KΩ	½	33574-42	BTS-27K	
R69	150KΩ	½	33574-51	BTS-150K	
R70	2.7Meg	½	33574-66	BTS-2.7 Meg	
R71	18KΩ	½	33574-40	BTS-18K	
R72	470KΩ	½	33574-57	BTS-470K	
R73	18KΩ	2	156911-3	BTB-18K	
R74	22Ω	½		BTS-22	Note 3
R75	33KΩ	½		BTS-33K	Note 3
R76	43Ω	2	160324-67		
R77	43Ω	2	160324-67		
R78	43Ω	2	160324-67		
R79	43Ω	2	160324-67		
R80	7.5Ω	5			
R81	*		154689-1		

Note 1. Some models may use a 18KΩ resistor in this application
Note 2. Some models may use a 470KΩ resistor in this application
Note 3. Not used in all models.
† Items R48A, R48B, R48C, C52A, C52B, C52C are combined in one unit.
♦ Items R53A, R53B, C54A, C54B are combined in one unit.
* Heater current limiting resistor 1250 cold-430 hot

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No	USE	REPLACEMENT DATA: CROSLEY PART No	Stancor PART No	Merit PART No	Triad PART No	RCA TYPE No	Halldorson PART No	Thordarson PART No
T1	Vert. Osc. Trans.	B155255-3-1	A-8125	A-3003	A-97X		B8702	34A87D
T2	Horiz. Output Trans.	157820-5-1					FB417 *	
		157820-6 ③						
T3	Vert. Output Trans.	C155572-2-1	A-8140 ①	A-3001 ④	A-120X ①		X1805 ③ ①	28S50 ③ ①
			②	②	②			
T4A	Yoke-Horiz. (23MH)	157908-2-1 ②	DY-10A	MDF-74	Y-20-1	214D1	DF603	Y-13
B	Vert. (3.5MH)		⑤ & 7	⑤ & 7	⑤ & 7	⑤ & 7	⑤ & 7	⑤ & 7

① Drill one new mounting hole.
② Drill new mounting holes.
③ Connect as auto transformer
④ Use 50:1 turns ratio.
⑤ Use original yoke cover and positioning device.
⑥ Connect jumper from terminal #3 to terminal #8 or #5.
⑦ Use original yoke network.
* Alternate horizontal output transformer .
⑨ Does not include rear cover and positioning device (part #155386).

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

ORIGINAL TERMINAL CONNECTIONS	Stancor Replacement Connections	Merit Replacement Connections	Triad Replacement Connections	RCA Replacement Connections	Halldorson Replacement Connections	Thordarson Replacement Connections
4					4	
3					3	
1					1	
2					2	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI	SEC	REPLACEMENT DATA: CROSLEY PART No	Stancor PART No	Merit PART No	Triad PART No	Halldorson PART No	Thordarson PART No	NOTES
T5	2.2KΩ	3.7Ω	B-157810-1-1 B-157819-1 ①	A-3825 ↓	A-3025	S-4X ↓	Z.005 ↓	24S50 ↓	↓ Drill one new mounting hole. ① Alternate audio output.

SPEAKER

ITEM No.	RATINGS: SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA: CROSLEY PART No.	JENSEN PART No.	OLSON PART No.	NOTES
SP1	4"	PM	3.7Ω	C-157998-1-1 157812-8 ①	5T-125 Mod. P4-X	1A07	① Alternate 4" PM speaker

COILS (RF-IF)

ITEM No	USE	DC RES: PRI	SEC	REPLACEMENT DATA: CROSLEY PART No	MEISSNER PART No	MERIT PART No	MILLER PART No	NOTES
L1	Ant. Coils	OOCT	0Ω					
L2	Fil. Choke	0Ω						
L3	RF, Mixer grid & osc. coils	0Ω						
L4	Fil. Choke	0Ω						
L5	RF Choke	0Ω						
L6	Conv. Plate	. 7Ω						
L7	1st Video IF	.3Ω		157797 ♦	17-1003	TV-102	6188	
L8	2nd Video IF	.3Ω	.3Ω	157798-1	17-1002	TV-106	6250	
L9	Fil. Choke	0Ω		155256-1	19-3001	TV-133	6175	.576 Microhenry
L10	3rd Video IF	.3Ω	.4Ω	157936-1			6253	Includes trap
L11	4th Video IF	4Ω	4Ω	157641-1			6251	
L12	Series Peak. Coil	2.2Ω		154376-1			4634	15.5 Microhenries
L13	Shunt Peak. Coil	18Ω		157833	19-3660 ↑		4650 ↑	710 Microhenries, wound wound on 4.7KΩ resistor resistor
L14	Series Peak. Coil	10Ω		158007-1	19-3250 ♦	TV-135 ♦	6194 ♦	230 Microhenries, wond on 27KΩ resistor
L15	1st Sound IF	2.8Ω	.8Ω	157841-1				
L16	2nd Sound IF	1.6Ω	3.3Ω	157858-1				
L17	Quadrature Coil	5.5Ω		157842	20-1005	TV-151	1470	
L18	Horiz. Osc.	120Ω		157791	20-1402 *	TV-133 *	6163 *	Prt. tapped @ 85Ω. Horiz. waveform windings 36Ω

↑ Parallel with 4.7KΩ resistor.
♦ Parallel with 27KΩ resistor.
* Reverse coil mounting in can.

FILTER CHOKE

ITEM No	RATINGS: TOTAL DIRECT CURRENT	D-C RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA: CROSLEY PART No	Stancor PART No	Merit PART No	Triad PART No	Halldorson PART No	Thordarson PART No
L19	230ADC	55Ω	1.1HY	B-155539-2-1 156539-1 ②	C-2336 ①	C-3996 ①	C-21X ①	C5037 ①	26C44 ①

① Drill one new mounting hole.
② Alternate filter choke.

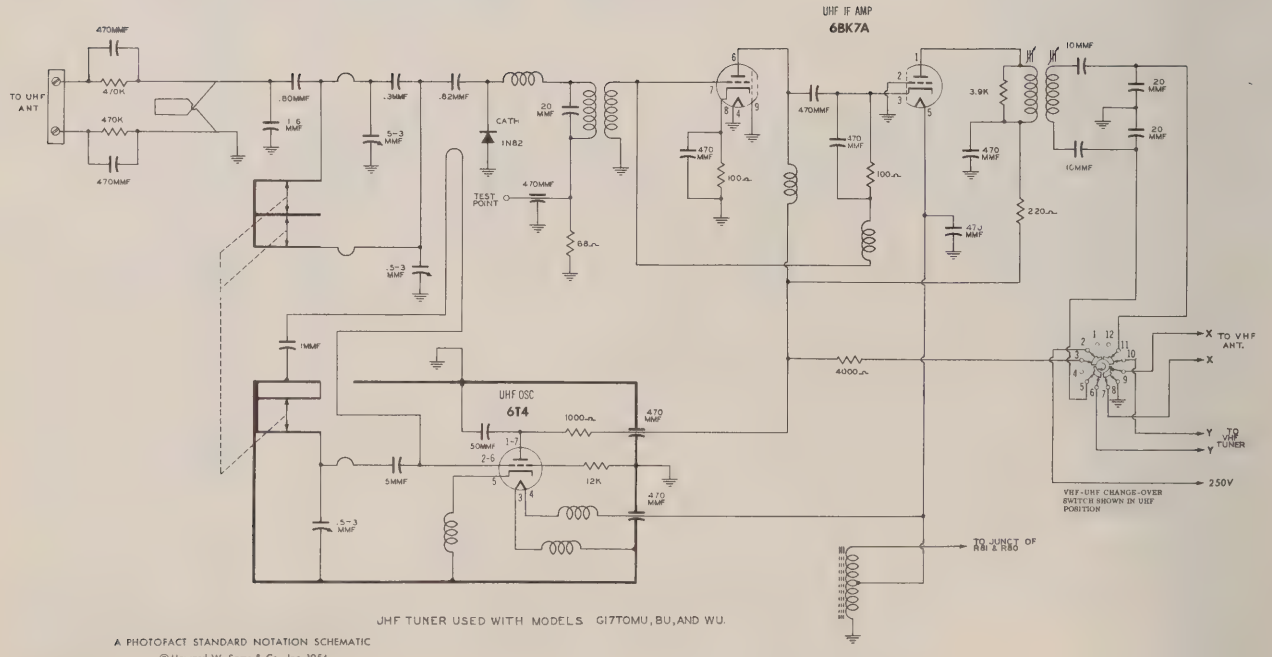
PARTS LIST AND DESCRIPTIONS (Continued)

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA						NOTES
	CURRENT	CROSLEY PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	SARKES TARZIAN PART No.	SELETRON PART No.	
M1	.220A	C-155575-2-1	1236A	RS250	6S300	300	6Q4	① Alternate selenium rectifier
M2	.220A	C-155575-2-1 155575-2 ①	1236A	RS250	6S300	300	6Q4	

MISCELLANEOUS

ITEM No.	PART NAME	CROSLEY PART No.	NOTES
M3	Tuner	157282	VHF
M4	Tuner	158116	UHF Converter (used with U Model only)
M5	Centering Magnet	153586	Horizontal & vertical (part of yoke cover)
M6	Ion Trap	153109-3	
B3	Trimmer Cap.	157870-1	Horiz. lock (10-160MMF)
	Cabinet	157771-1	17TOMH, less base
	Cabinet	157771-2	17TOBH, less base
	Cabinet	157771-3	17TOWH, less base
	Cabinet	157798-1	17TOMU, less base
	Cabinet	157798-2	17TOBU, less base
	Cabinet	157798-3	17TOWU, less base
	Cabinet	157958-4	17TOBKH, Less base
	Cabinet	157958-5	17TOWCH, Less base
	Base	157947	17TOMH, TOBH, TOWH
	Base	157947-1	17TOMU, TOBU, TOWU, TOBKH, TOWEH
	Knob	157753	VHF Channel Selector
	Knob	157750-1	Control (4 used)
	Knob	157754-1	Fine tuning - VHF
	Knob	157754-2	Fine tuning - UHF
	Knob	157918-1	UHF Channel Selector
	Knob	157750-2	UHF - VHF switch
	Safety Glass	155350-13	



UHF TUNER USED WITH MODELS 17TOMU, BU, AND WU.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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UHF TUNER SCHEMATIC

TROUBLE SHOOTING AIDS (cont)

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

POWER

DEAD SET

If filaments fail to light, check AC interlock assembly, switch on volume control and R81. Check by substitution all tubes. If filaments light, check B+ filter decoupling network for component failure or change of value.

SMALL AND/OR DIM PICTURE

Check M1 and M2. Check B+ filter decoupling network.

HIGH VOLTAGE

LOSS OF HIGH VOLTAGE

Check by substitution V11, V12, V13 and V14. Check waveform W12.

If Satisfactory	If Unsatisfactory
Check T2, T4A, C71, C72, C70, R73 and other associated components.	Check L18, C69, C68, C66, C65, C67, R68, R67, R71 and other associated components.

INSUFFICIENT HIGH VOLTAGE

Check by substitution V11, V12, V13 and V14. Check picture tube. Proceed as outlined under "Loss of High Voltage".

BLOOMING

Check by substitution V11, V12, V13 and V14. Check T2, T4A, C71 and other associated components.

GENERAL

RASTER – SOUND – NO PICTURE

Follow procedure outlined under "Loss of Video".

RASTER – PICTURE – NO SOUND

Follow procedure outlined under "Weak or No Sound".

RASTER – NO SOUND – NO PICTURE

Check by substitution V1, V2, V3, V4, V5, V6 and V9. Check IF and video components.

NO RASTER - SOUND – HIGH VOLTAGE

Check R60 for open. If open, sound and high voltage will be satisfactory. Video waveform will be present at pin 11 of V15.

NO RASTER – NO SOUND

Follow procedure outlined under "Dead Set".

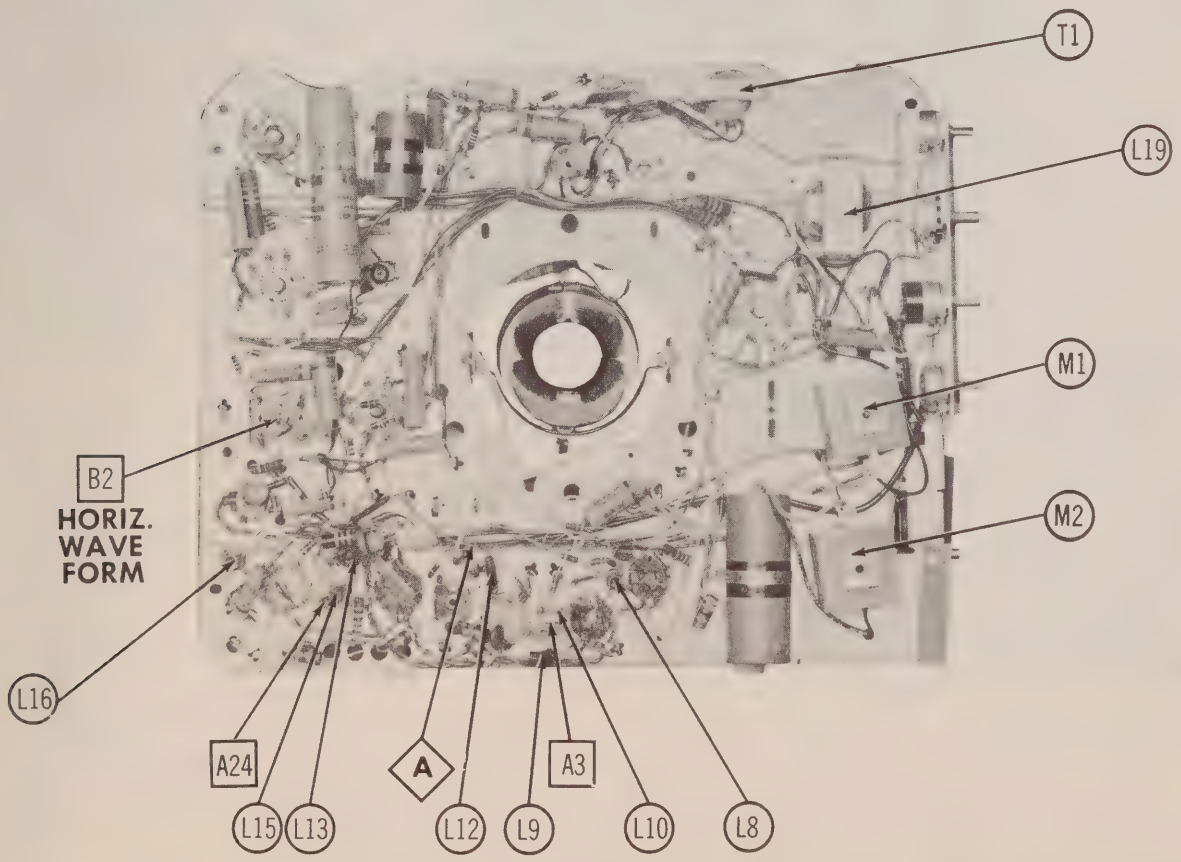
KEYSTONE EFFECT

Check T5, C73, R59.

INTERMITTENT STREAKS

Check high voltage section for corona discharge and arcing.

Symptoms shown are assumed and are not indicative of the quality and workmanship of this equipment.



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR & ALIGN. IDENTIFICATION

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustment of the VHF tuner oscillator circuit may be accomplished by removal of the channel selector and fine tuning knobs. The adjustments are accessible, one at time, thru the small hole in the cabinet to the right of the channel selector shaft.

PICTURE TUBE SAFETY GLASS CLEANING

For picture tube safety glass cleaning, it is necessary to remove chassis. (See disassembly instructions).

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions).

SERVICE ADJUSTMENT LOCATION

See tube placement chart on page 5.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

For adjustment of the horizontal oscillator, it is necessary to remove the rear cover and supply power to set. Adjustment is located on top of chassis. Set the horizontal hold control at the center of its range and adjust the horizontal frequency slug (L18) until picture synchronizes horizontally. (For location see tube placement chart).

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, it is necessary to remove rear cover and supply power to set. Adjust the buzz control for maximum volume and minimum buzz. See tube placement chart for location.

FUSES

One fuse-type resistor for LV power supply protection. (For location see tube placement chart).

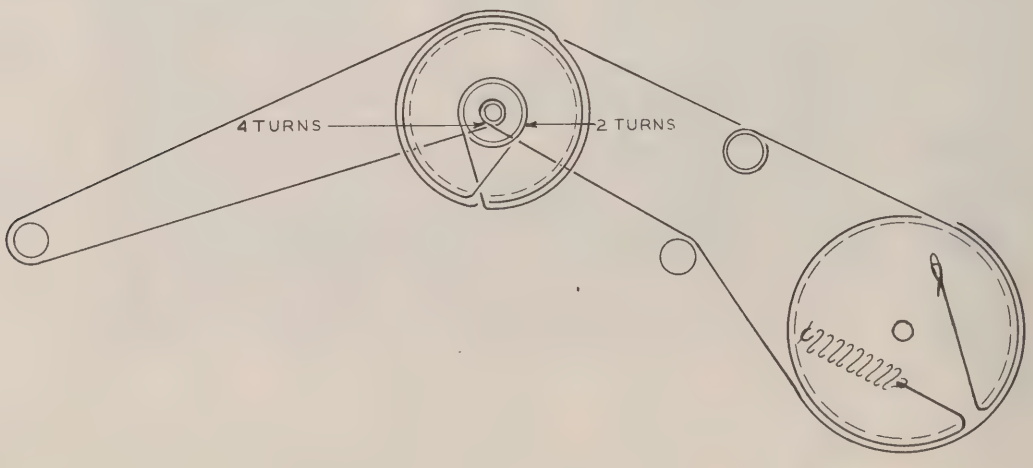
CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube, located flush against the deflection yoke. Rotate the two rings around the neck of the tube until the picture is properly centered.

DISASSEMBLY INSTRUCTIONS

1. Remove 6 push-on type control knobs from side panel of cabinet.
2. Remove 5 wood screws. Remove rear cover.
3. Remove 1 wood screw. Remove antenna bracket.
4. Remove 2 wood screws. Remove interlock.
5. Remove 2 wing nuts. Remove speaker.
6. Remove 4 cabinet bolts from chassis mounting board, 2 wood screws at bottom rear of cabinet and 1 wood screw from bottom front of cabinet.

NOTE: This chassis sets vertically, and can be serviced without removal from mounting board.



UHF DRIVE CORD STRINGING

PROPERTY OF
L T [illegible]
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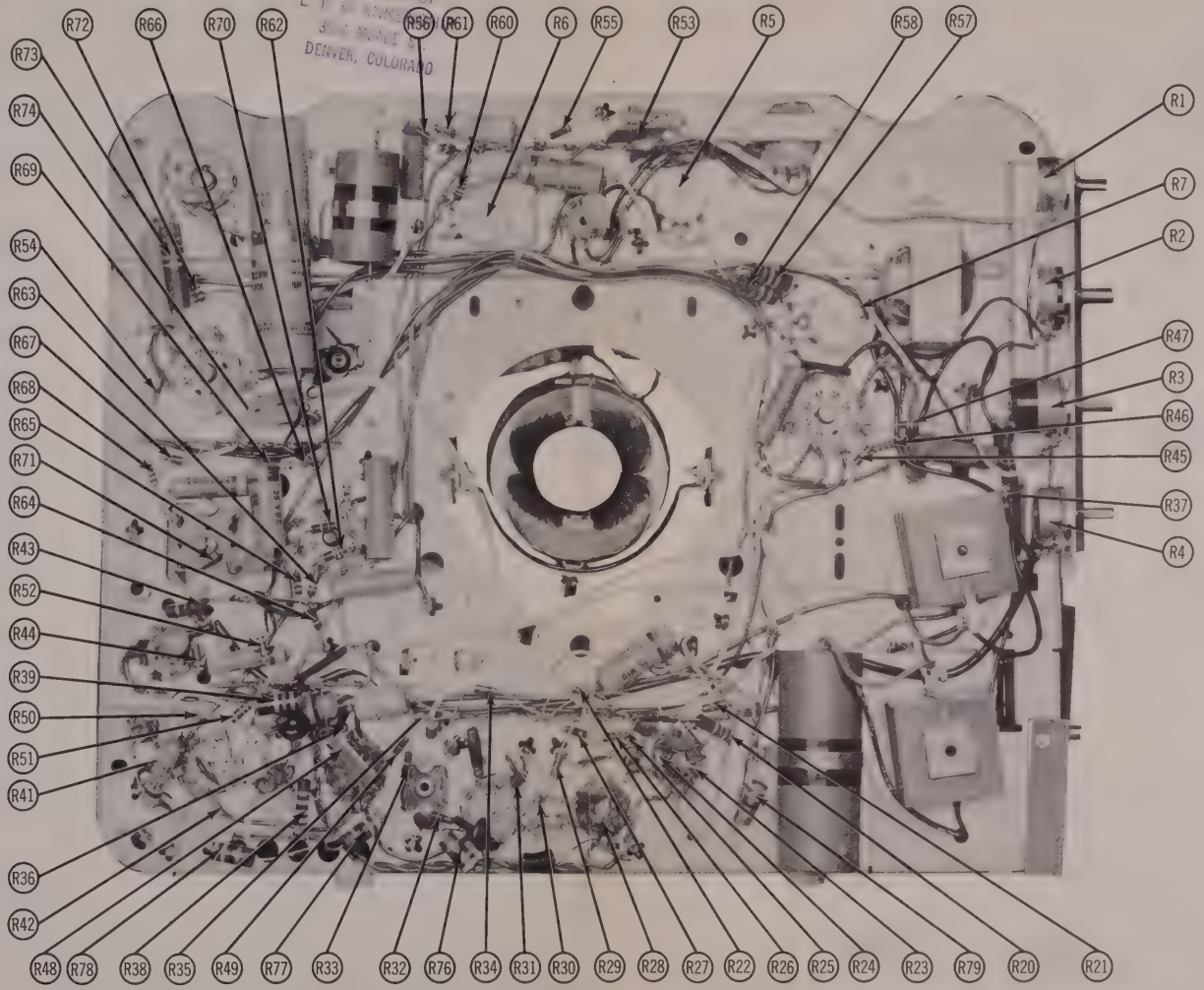
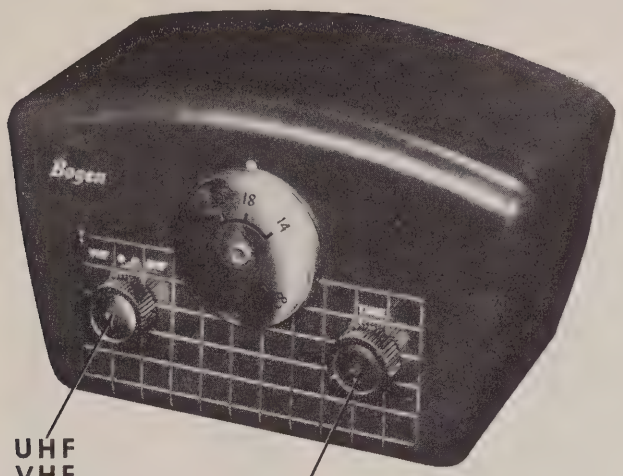


CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

DAVID BOGEN
MODEL UCT-1 (UHF Conv.)



L. F. BLANKENSHIP
3024 MEADE ST.
DENVER, COLORADO

DAVID BOGEN
MODEL UCT-1 (UHF Conv.)

TRADE NAME	David Bogen Model UCT-1
MANUFACTURER	David Bogen Co., Inc., 29 Ninth Ave., New York 14, N.Y.
TYPE SET	AC Operated All-Channel UHF Converter
TUBES (Two)	Types 6AF4 (or) 6T4 Oscillator, 6BK7A (or) 6BZ7 IF Amp.
POWER SUPPLY	110-120 Volts AC RATING .36 Amp. @ 117 Volts AC
TUNING RANGE-	Channels 14 thru 83

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Care should be exercised during converter alignment since the stagger tuned IF's may oscillate if not properly aligned.

The following test equipment is required:

- UHF Sweep signal generator (470-890MC)
- UHF Single signal generator (470-890MC)
- VHF Single signal generator (76-88MC)
- High gain oscilloscope

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

Connect a 300Ω detector box (Fig. 1) to converter output terminals.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	Across UHF antenna terminals.	660MC (40MC Swp)	76MC 82.5MC 88MC	29	Vert. Amp. to detector (Fig.1) Low side to chassis.	A1, A2	Connect VHF marker generator across output terminals. Adjust for response similar to Fig.2. A2 is adjusted by compressing or expanding coil forms.
2.	"	"	Not used	470MC	14	"	A3	Adjust for maximum marker amplitude.
3.	"	"	"	890MC	83			Readjust A3 for maximum marker amplitude.
4.	Repeat step 2. If the low and high frequency ends of the band cannot be made to track, change the oscillator tube and repeat the entire procedure.							
5.	Direct	Across VHF antenna terminals.	Not used	660MC	45	Vert. Amp. to detector (Fig. 1) Low side to chassis.	A4	Adjust for maximum marker amplitude.

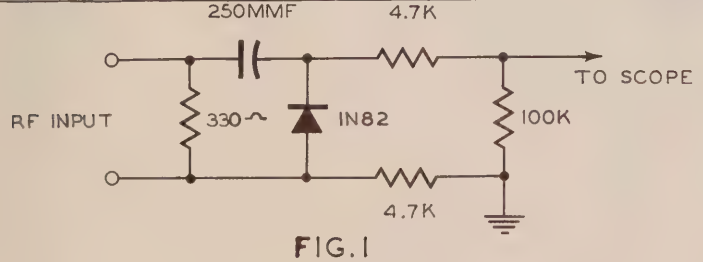


FIG.1

FIG.2

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."

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PARTS LIST AND DESCRIPTIONS

DAVID BOGEN
MODEL UCT-1

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		David Bogen PART No.	STANDARD REPLACEMENT		
V1A	Oscillator	6AF4	6AF4	6DK	
B	Oscillator	6T4	6T4	6DK	
V2A	IF Amplifier	6BK7A	6BK7A	9AJ	
B	IF Amplifier	6BZ7	6BZ7	9AJ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	David Bogen PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	■30	150		AFH2-10		B010		FP211	TVL-2422	
B	▲20	150								
C2	1			SIINP0	TCZ-1	TZ03	NP0K-010		5TCCB-V1	
C3	1			SIINP0	TCZ-1	TZ03	NP0K-010		5TCCB-V1	
C4	.8-6.5									
C5	1			SIINP0	TCZ-1	TZ03	NP0K-010		5TCCB-V1	
C6	2.4									
C7	1000			SII000	D6-102	TP52	GP2L-102	UC-521	5HK-D1	
C8	.22									
C9	3-10									
C10	10									
C11	1000									
C12	1000			SII000	D6-102	TP52	GP2L-102	UC-521	5HK-D1	
C13	47			SI47	D6-470	TP29	GP1K-470	UC-5447	5GA-Q47	
C14	5			SI5NP0	TCZ-4.7	TZ07	NP0K-050	ZT-555	5TCCB-V47	
C15	1000									
C16	.047	400		489ZX-05	DF-503	CUB4S47		PT4147	4TM-S47	

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	David Bogen PART No.	IRC PART No.	
R1	470KΩ	½		BTS-470K	
R2	470KΩ	½		BTS-470K	
R3	270Ω	½		BTS-270	
R4	10KΩ	½		BTS-10K	
R5	68KΩ	½		BTS-68K	
R6	100Ω	½		BTS-100	
R7	2700Ω	1		BTA-2700	

TRANSFORMER (POWER)

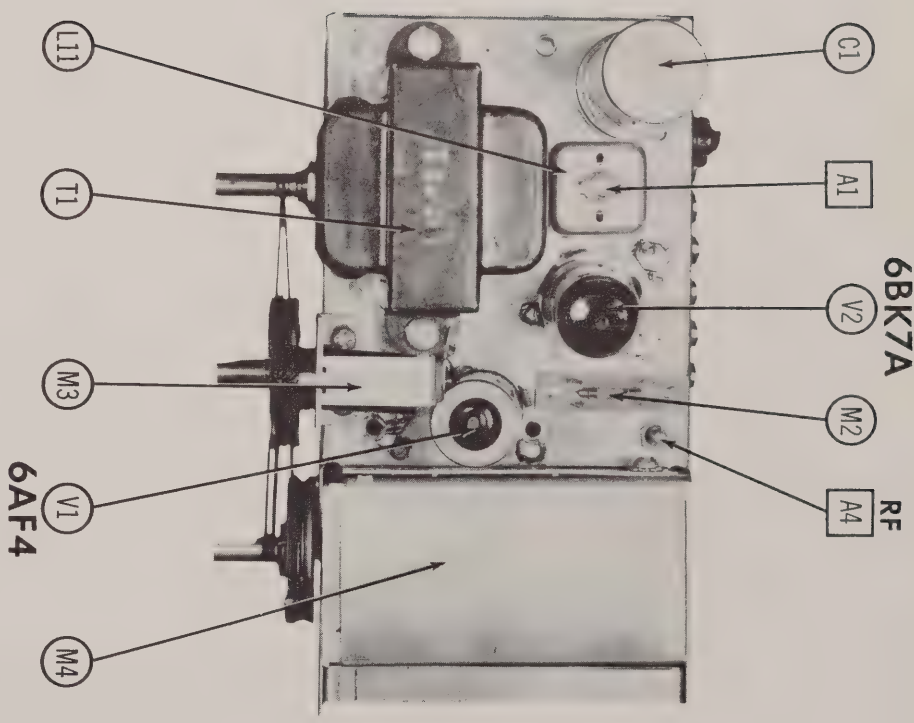
ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	David Bogen PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.
T1	117VAC @ .36A	110VCT .035ADC tap @ 6.3VAC @ .85A			T399					

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	David Bogen PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1A	UHF Ant. Coil	0Ω						
B	UHF Osc. Coil	0Ω						
L2	UHF Ant. Coil End Inductor	0Ω						
L3	RF Choke	0Ω		U421				
L4	Cathode Choke	.1Ω		U407				

(CONT'D ON NEXT PAGE)

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

COILS (cont)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: David Bogen PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L5	Fil. Choke	.1Ω		U420				
L6	Fil. Choke	.1Ω		U407				
L7	RF Choke	.1Ω		U407				
L8	UHF IF Coupling	0Ω		U406				
L9	Cathode Choke	0Ω		U406				
L10	RF Choke	.8Ω		U501				1 Microhenry (IRC part #CLA)
L11	UHF IF Output Coil	0Ω	0Ω	U409				

SELENIUM RECTIFIER

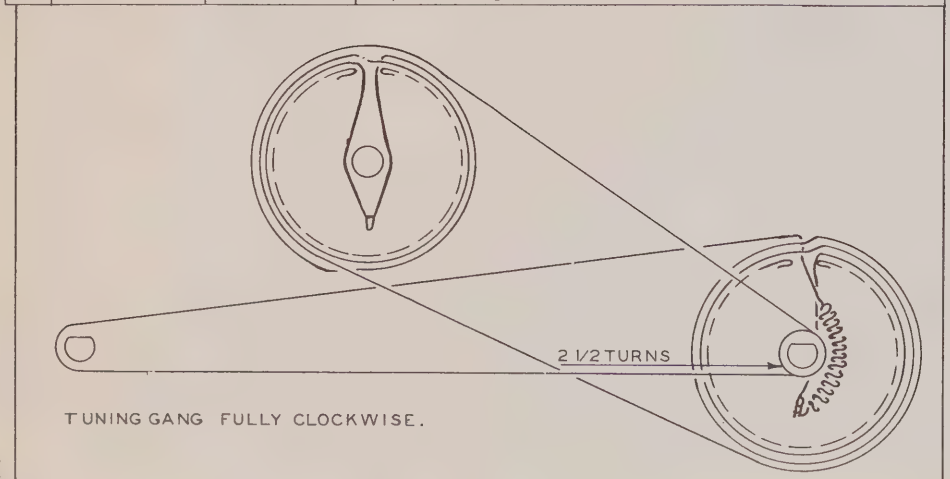
ITEM No.	RATING CURRENT	REPLACEMENT DATA: David Bogen PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	SARKES TARZIAN PART No.	SELETRON PART No.	NOTES
M1	.035ADC	H373	1263A	CR-30	8S35	35	8J1	

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA: David Bogen PART No.	SYLVANIA PART No.	FEDERAL PART No.	NOTES
M2		H398	1N82 or 1N82A		UHF Mixer

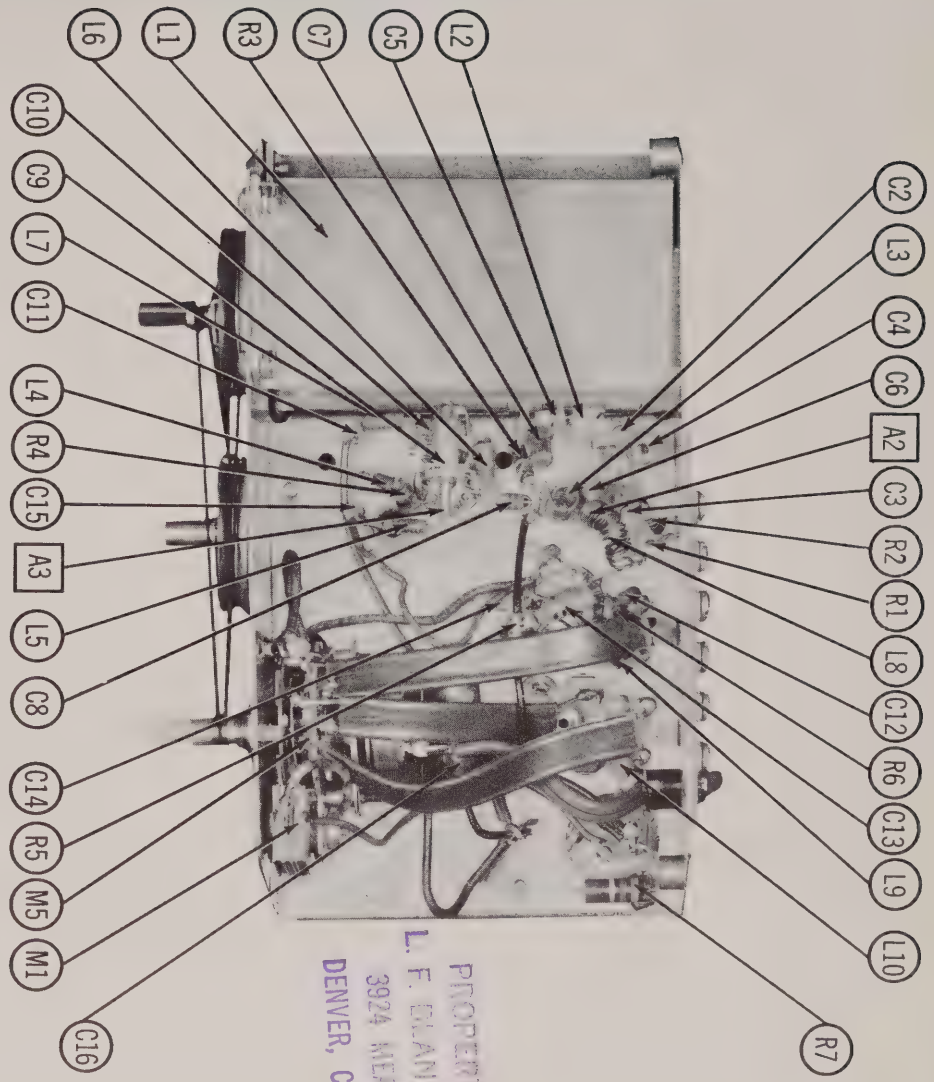
MISCELLANEOUS

ITEM No.	PART NAME	David Bogen PART No.	NOTES
M3	Dial Light		#51
M4	Tuner		
M5	Switch	S384	Off/on UHF change-over



DRIVE CORD STRINGING

CHASSIS—BOTTOM VIEW



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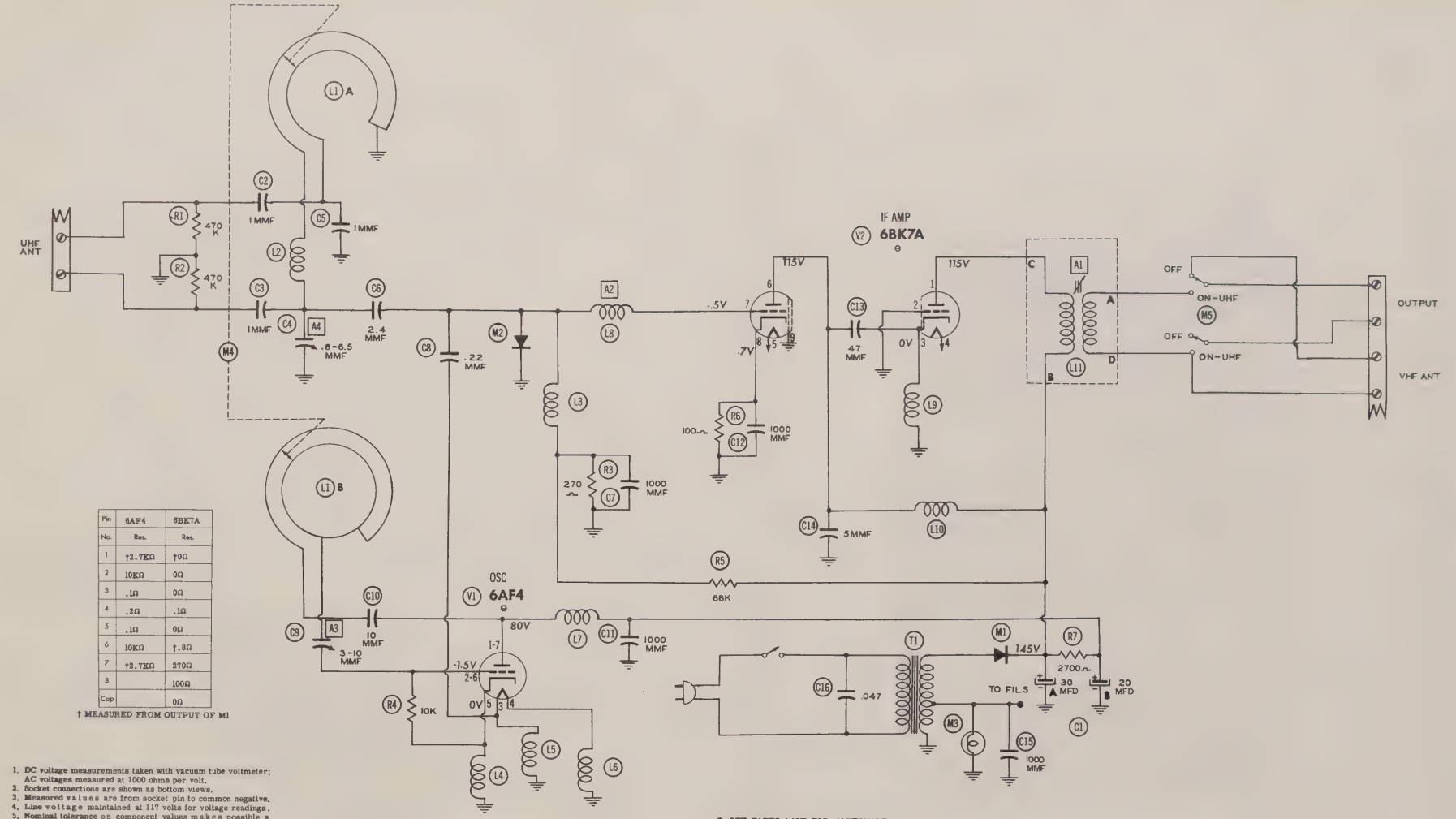
DAVID BOGEN
MODEL UCT-1

DAVID BOGEN
MODEL UCT-1



Pin No.	6AF4 Res.	6BK7A Res.
1	†2.7KΩ	†0Ω
2	10KΩ	0Ω
3	.1Ω	0Ω
4	.2Ω	.1Ω
5	.1Ω	0Ω
6	10KΩ	†.8Ω
7	†2.7KΩ	270Ω
8		100Ω
Cap		0Ω

† MEASURED FROM OUTPUT OF M1

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

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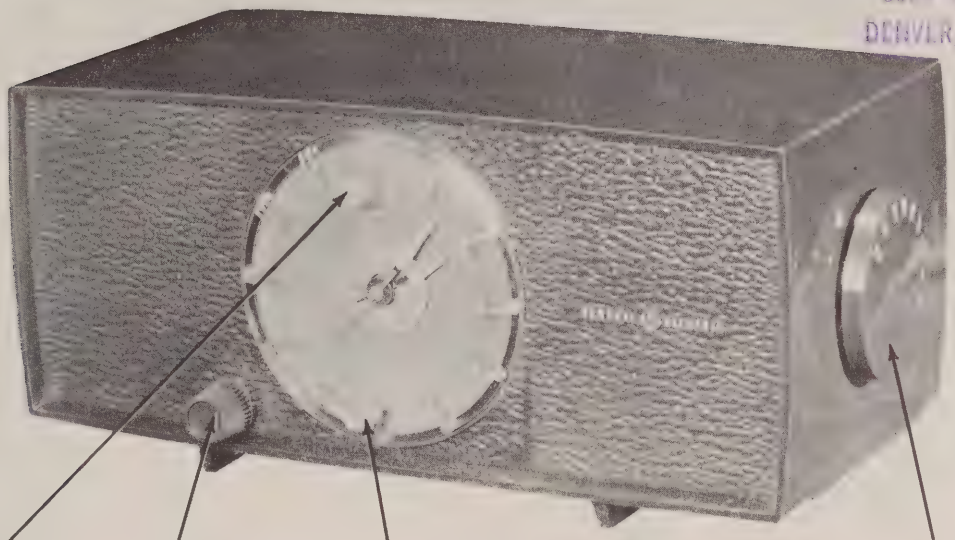
GENERAL ELECTRIC
MODELS 560, 561



GENERAL ELECTRIC
MODELS 560, 561

TRADE NAME	General Electric Models 560, 561
MANUFACTURER	General Electric Co., Electronics Dept., Electronics Park, Syracuse, N. Y.
TYPE SET	AC Operated AM Superheterodyne Receiver with electric clock
TUBES (Five)	Types 12BE6 Conv., 12BA6 IF Amp., 12AV6 Det. -AVC-AF Amp., 50C5 Audio Output, 35W4 Rectifier
POWER SUPPLY	105-120 Volts AC-60 cycles
RATING	.23 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an isulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05MFD	High side to pin 1 (grid) of 12BA6 (V1). Low side to B-.	455KC (400~ Mod)	Tuning gang fully open	Across voice coil	A1, A2	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	"	High side to pin 7 (grid) of 12BE6 (V1). Low side to B-	455KC	"	"	A3, A4	Adjust A3, A4, A2 and A1 for maximum output
3.							
3.		Loop	1620KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4.		"	1500KC	Tune to 1500KC signal	"	A6	Adjust A6 for maximum output while rocking tuning gang thru 1500KC signal.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		General Electric PART No.	STANDARD REPLACEMENT		
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BA6	12BA6	7BK	
V3	Det-AVC-AF Amp.	12AV6	12AV6	7BT	
V4	Output	50C5	50C5	7CV	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	General Electric PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	50	150	RCE-160	PR5150/50-50		BBRD-5515		2N521	TVA-2453	Red
B	50	150								Yellow
C2	.05	400	UCL-045	P488-05	DF-503	CUB4S5		PT415	4TM-55	
C3	47		RCW-3075							
C4A	400		RCW-3048	PA-100-4	D6-401	TP45	GP2K-401	UC-534	5GA-T4	
B	2000				DD-202	K072	801-002	5HK-D2	5HK-D2	
C	220				D6-221	TP34	GP2K-221	UC-5322	5GA-T22	
D	50000				DD-502	K080	801-005	5HK-D5	5HK-D5	
C5	.022	600	RCH-050	P688-022		CUB6S22		PT6122	6TM-S22	
C6	.047	600	RCN-053	689ZX-047	DF-503	PJ6S47		PT6147	6TM-S47	
C7	.05	400	UCC-045	P488-05	DF-503	CUB4S5		PT415	4TM-S5	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	General Electric PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	RRC-240	Q13-133	A47-500K-Z	B-58	U-48	Volume
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A

RESISTORS

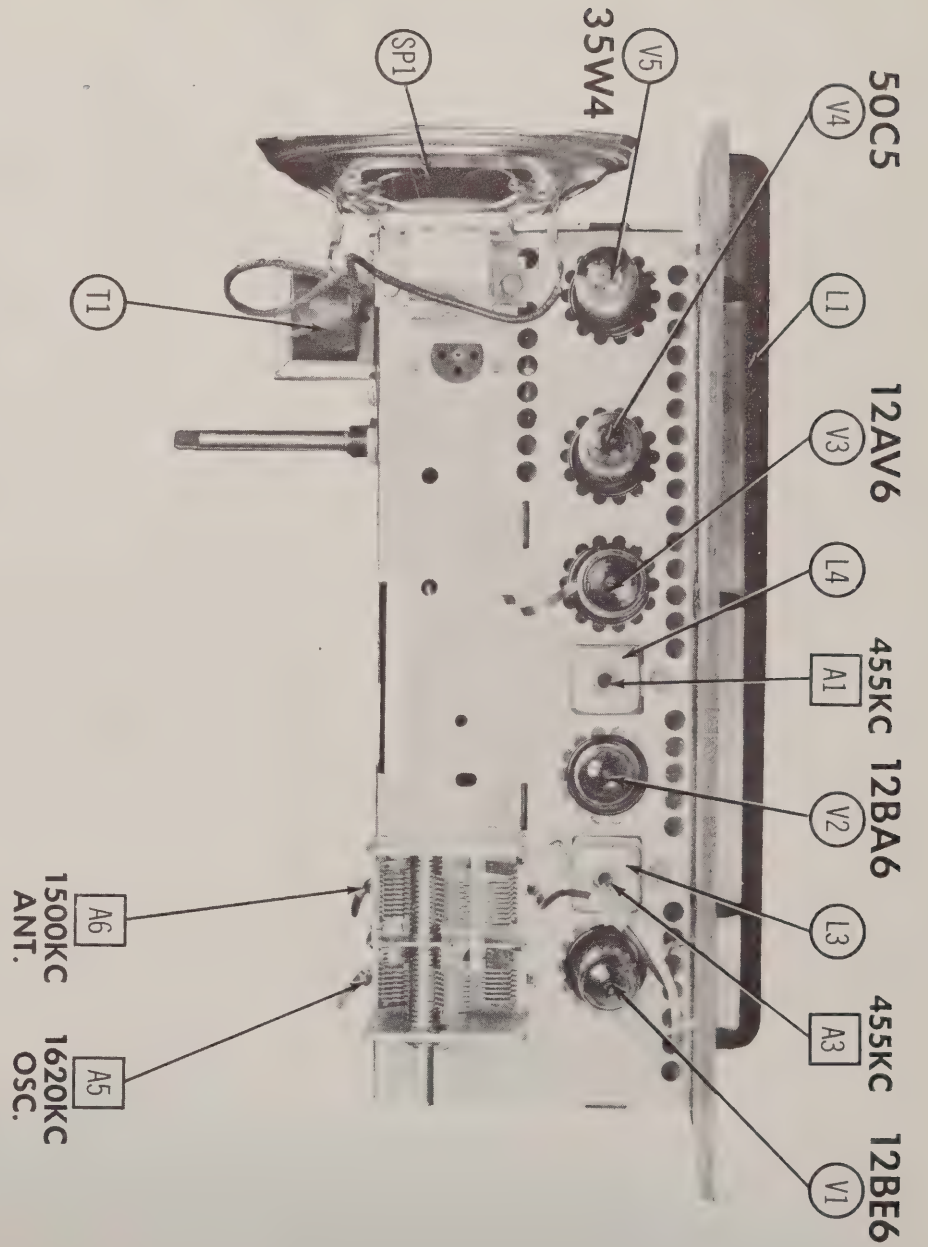
ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	General Electric PART No.	IRC PART No.	
R2	22KΩ	½	URD-081	BTS-22K	
R3	100Ω	½	URD-025	BTS-100	
R4	68Ω	½	URD-021	BTS-68	
R5	2.2 Meg	½	URD-129	BTS-2.2 Meg	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	General Electric PART No.	IRC PART No.	
R6	6.8Meg	½	URD-141	BTS-6.8Meg	
R7	470KΩ	½	URD-113	BTS-470K	
R8	470KΩ	½	URD-113	BTS-470K	
R9	150Ω	½	URD-029	BTS-150	
R10	1500Ω	2	URF-053	BTB-1500	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	General Electric PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	
T1	2.5KΩ	3.5Ω	RTD-138	A-3336 ①	A-3031 ①		Z1102 ①	TS-24S50A ①	① Drill one new mounting hole.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	General Electric PART No.	JENSEN PART No.	QUAM PART No.	
SP1	4"	PM	3.5Ω	ROP-029	ST-113 Mod P4-X ①	4A1 ①	① Use universal mounting bracket.

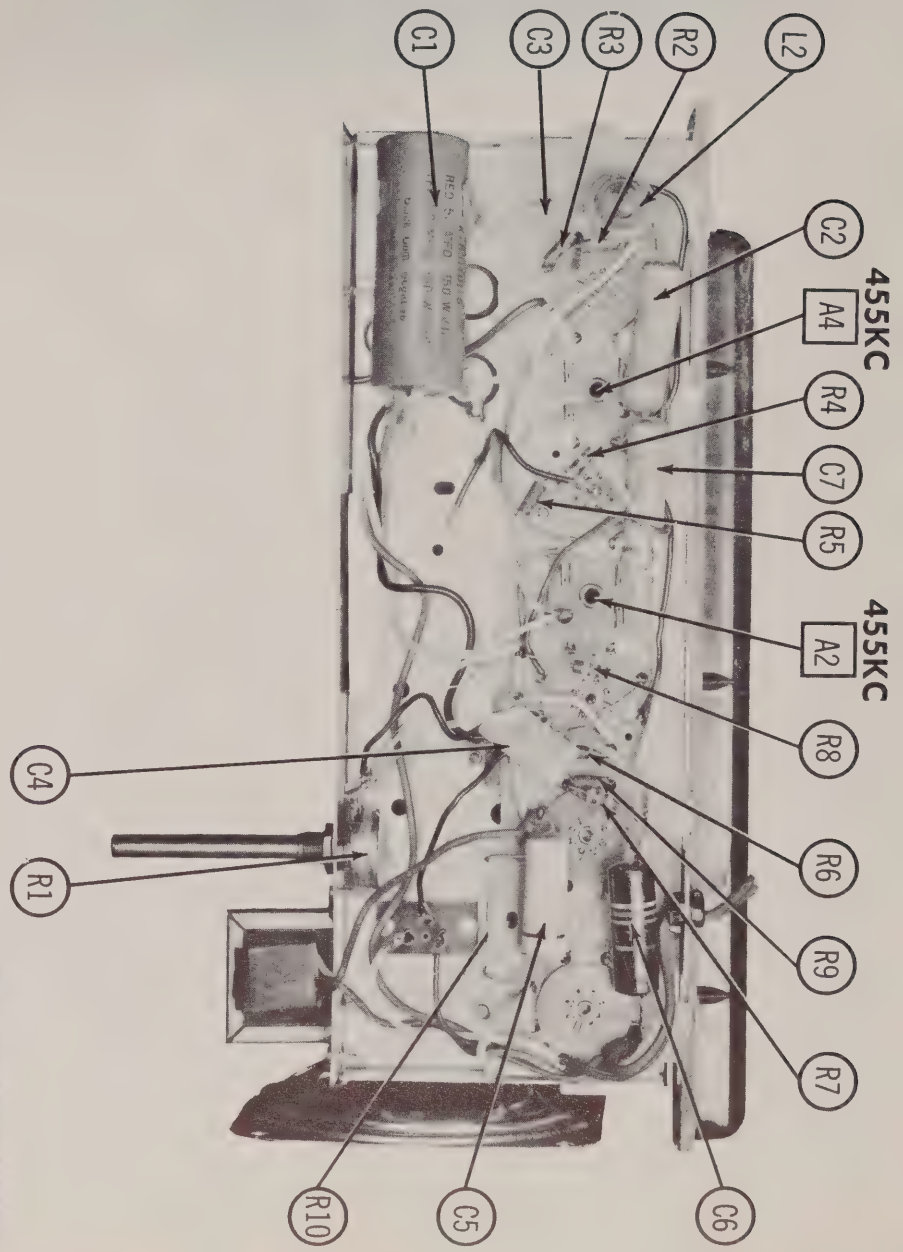
COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	General Electric PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Ant. Coil	.5Ω		RLL-055				
L2	Osc. Coil	.6Ω	7Ω	RLC-122	14-1074		70-Osc.	
L3	Input IF	14Ω	14Ω	RTL-143	16-6758	BC-352	12-C1	
L4	Output IF	14Ω	17Ω	RTL-143	16-6758	BC-353	12-C2	

MISCELLANEOUS

ITEM No.	PART NAME	General Electric PART No.	NOTES
M1	Tuning cap	RCT-073	(29-330MMF) (21-150MMF)
M2	Clock	RZC-030	With switch
	Cabinet	RAU-389	Brown (Model 560)
	Cabinet	RAU-390	Ivory (Model 561)
	Knob	RDK-358	Tuning-ivory
	Knob	RDK-359	Tuning-brown
	Knob	RDK-360	Volume-brown
	Knob	RDK-361	Volume-ivory
	Knob	RZK-020	Clock-with dot (2 used)
	Crystal	RZW-008	Dial
	Board	RII-088	Sub-chassis, bare

CHASSIS—BOTTOM VIEW



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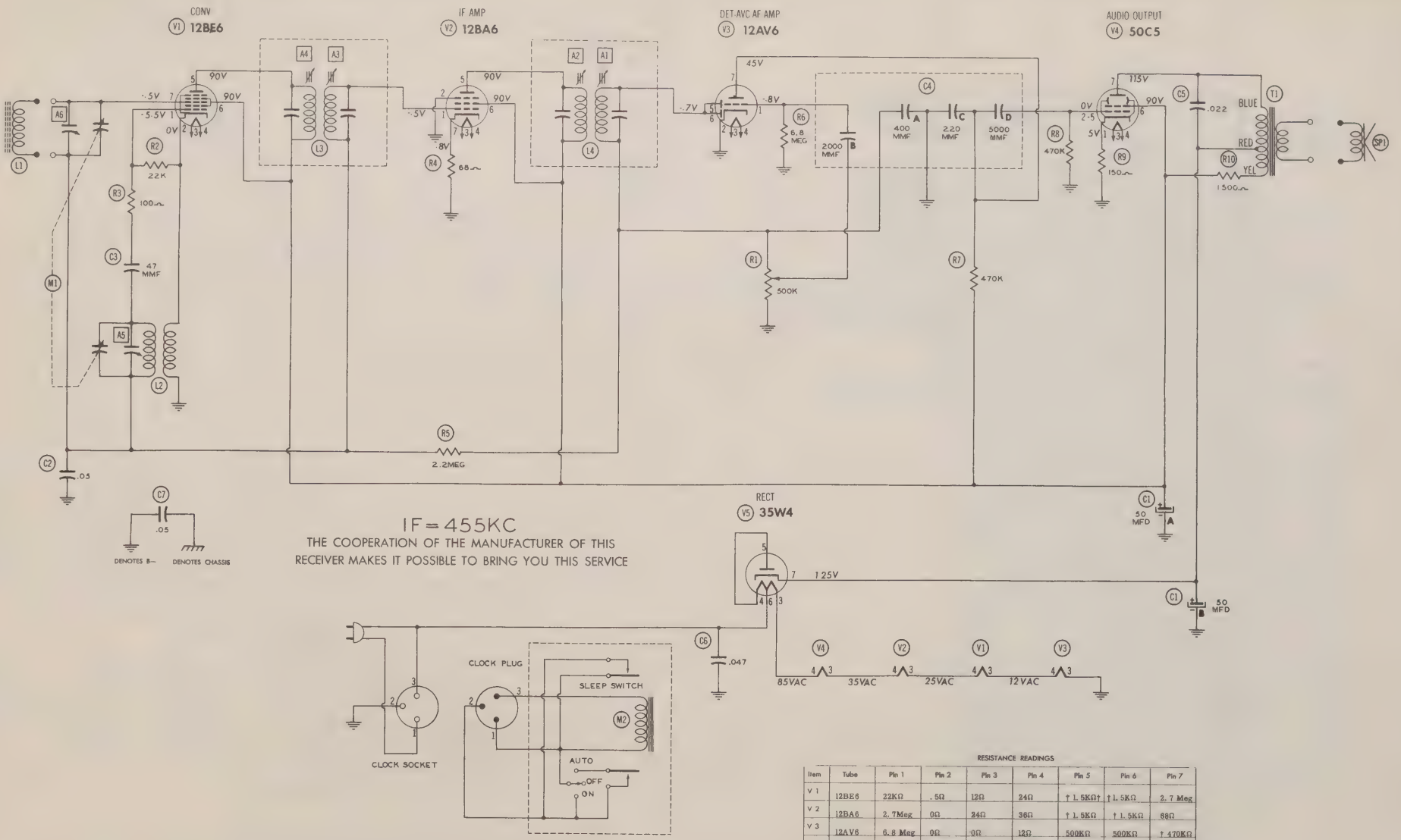

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	.5Ω	12Ω	24Ω	† 1.5KΩ†	† 1.5KΩ	2.7 Meg
V 2	12BA6	2.7Meg	0Ω	24Ω	36Ω	† 1.5KΩ	† 1.5KΩ	88Ω
V 3	12AV6	6.8 Meg	0Ω	0Ω	12Ω	500KΩ	500KΩ	† 470KΩ
V 4	50C5	150Ω	470KΩ	36Ω	84Ω	470KΩ	† 1.5KΩ	† 220Ω
V 5	35W4	INF	† 9Ω	84Ω	120Ω	120Ω	110Ω	120KΩ

† MEASURED FROM PIN 7 OF V5.

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RETMA MEMBER

HOFFMAN MODELS 21B147, U, 21B321, U, 21B723, U, 21M146, U, 21M320, U, 21M721, U, 21M722, U, 21P148, U, 21P322, U, 21P724 U (Ch. 400-21, 401-21)

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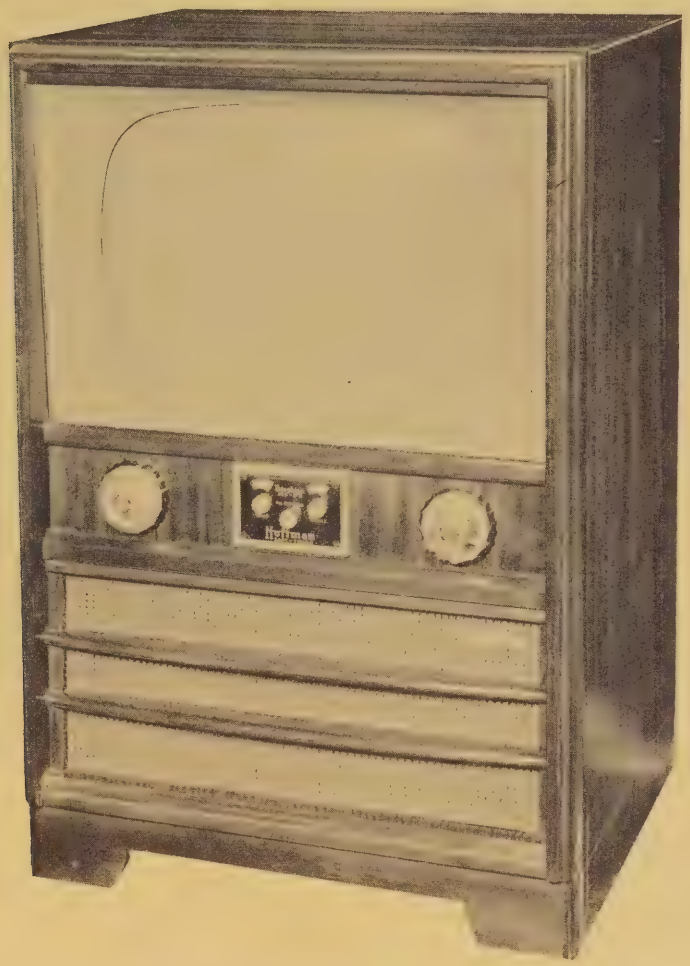

MODEL 21M320U

HOFFMAN MODELS 21B147, U, 21B321, U, 21B723, U, 21M146, U, 21M320, U, 21M721, U, 21M722, U, 21P148, U, 21P322, U, 21P724, U (Ch. 400-21, 401-21)

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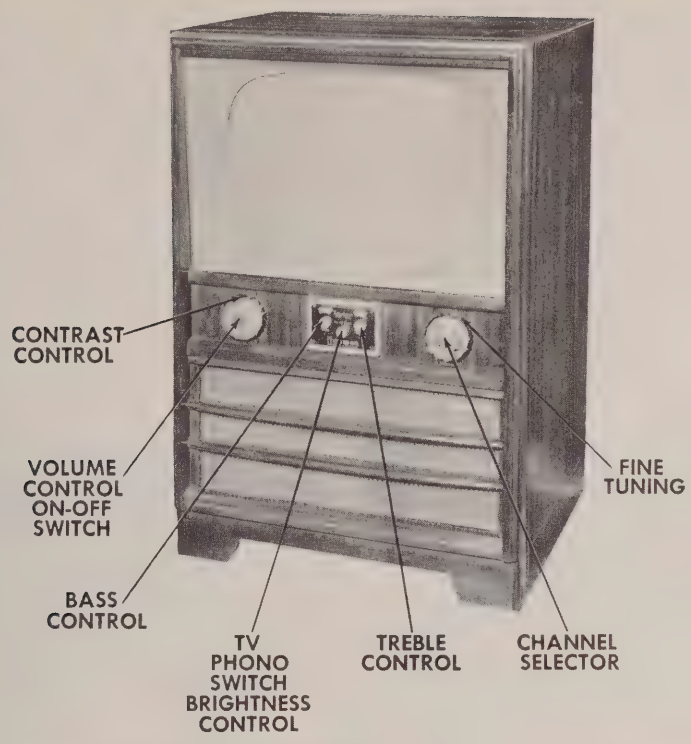

HOFFMAN MODEL 21M320U

TRADE NAME	HOFFMAN MODELS	CHASSIS
	21B321, U, 21B723, U, 21M320, U, 21M721, U, 21M722, U, 21P322, U, 21P724, U	400-21
	21B147, U, 21M146, U. 21P148, U	401-21
MANUFACTURER	Hoffman Radio Corp., 6200 S. Avalon Blvd., Los Angeles, California	
TYPE SET	Television Receiver	
TUBES	Twenty-seven	
POWER SUPPLY	110-120 Volts AC-60 Cycles	RATING 2.42 Amp. @ 117 Volts AC
TUNING RANGE -	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)	

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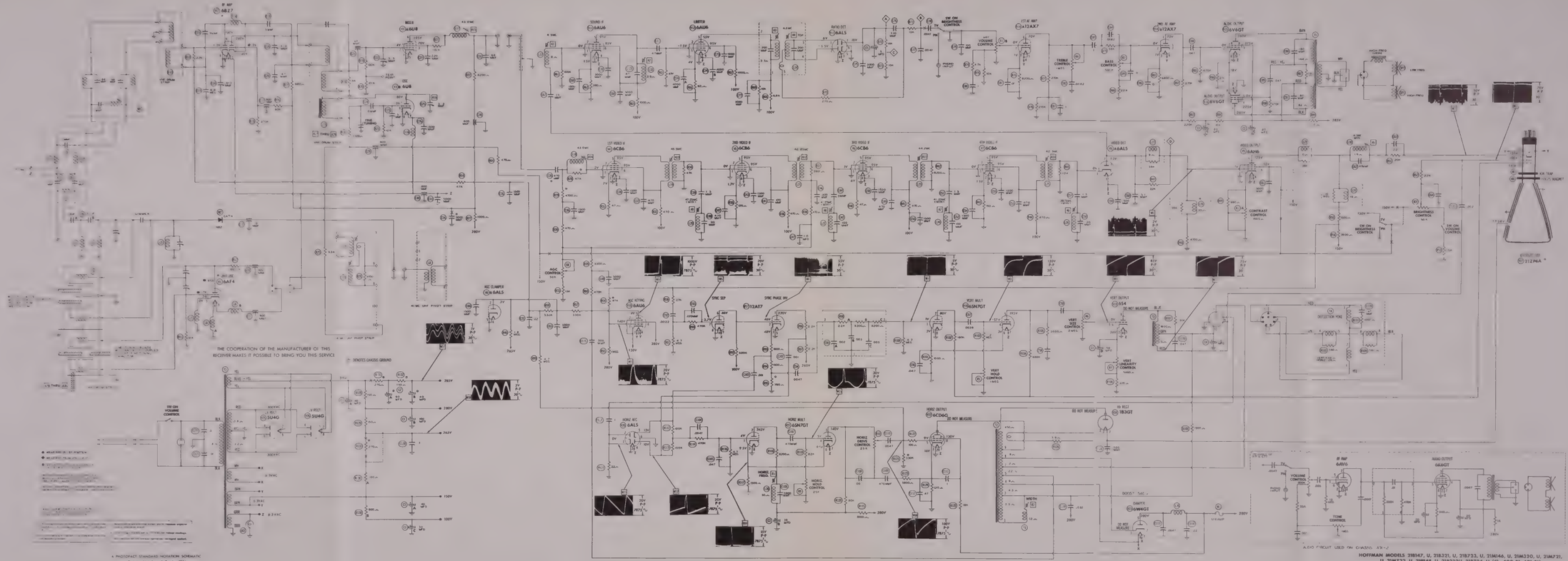
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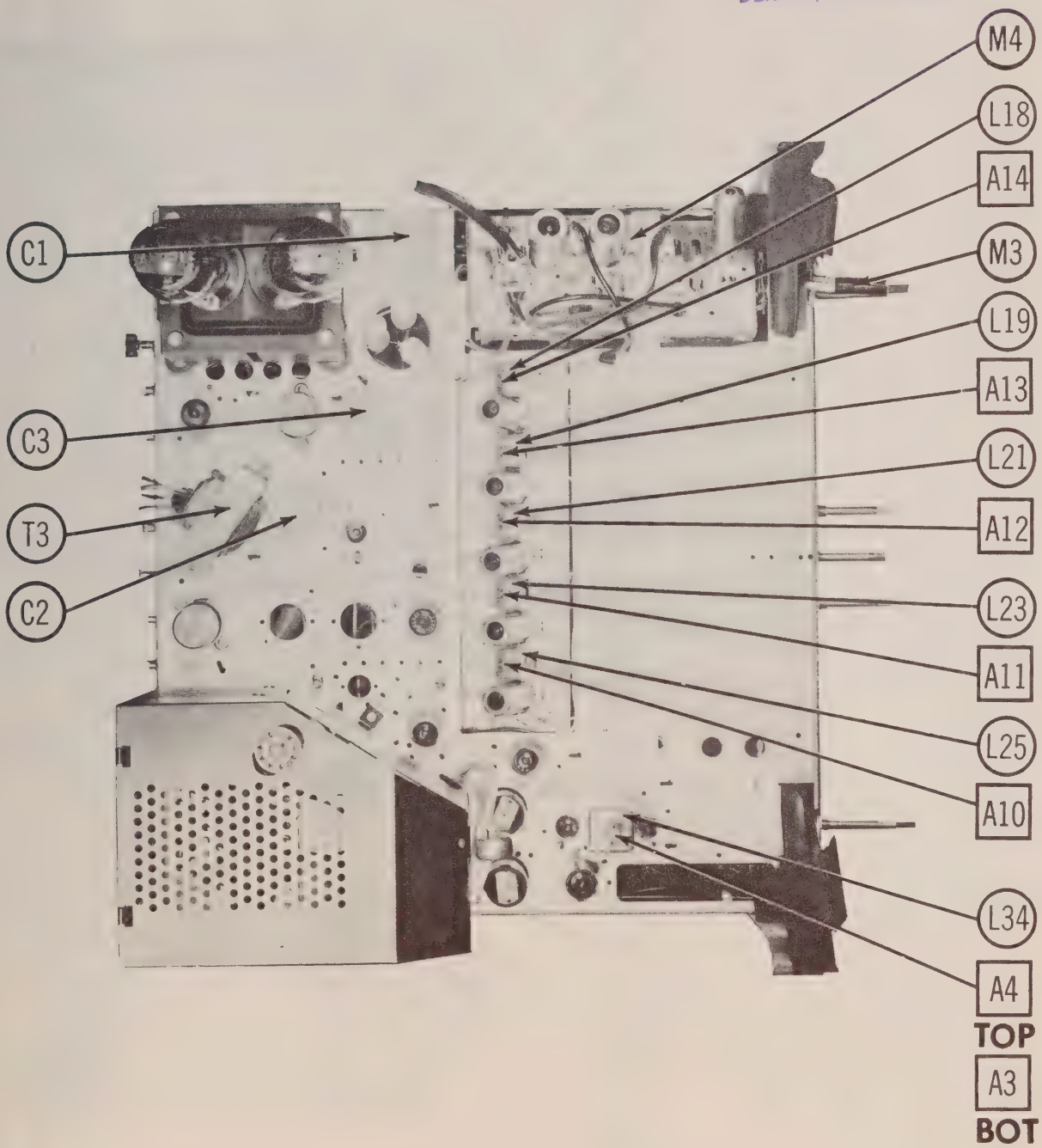

CHASSIS TOP VIEW

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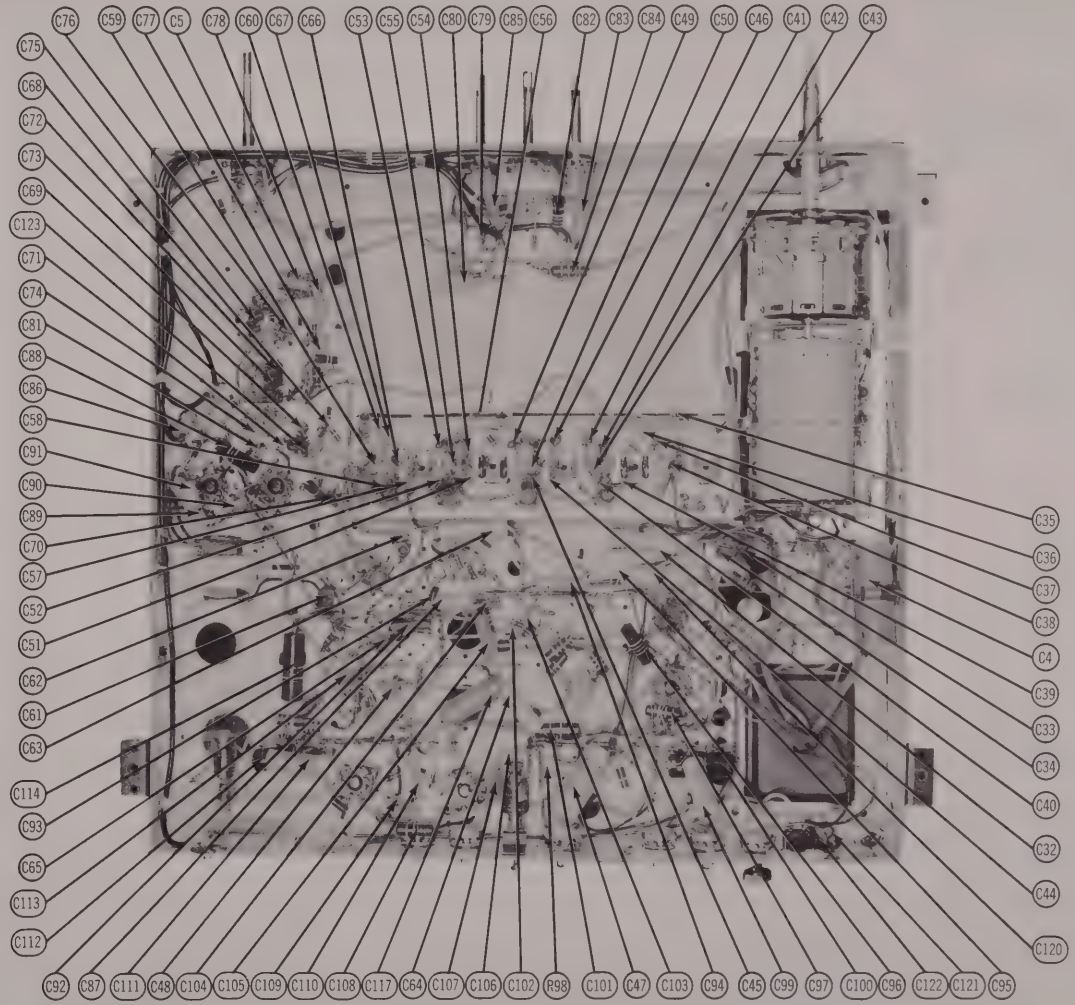

CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

TUBE PLACEMENT CHART

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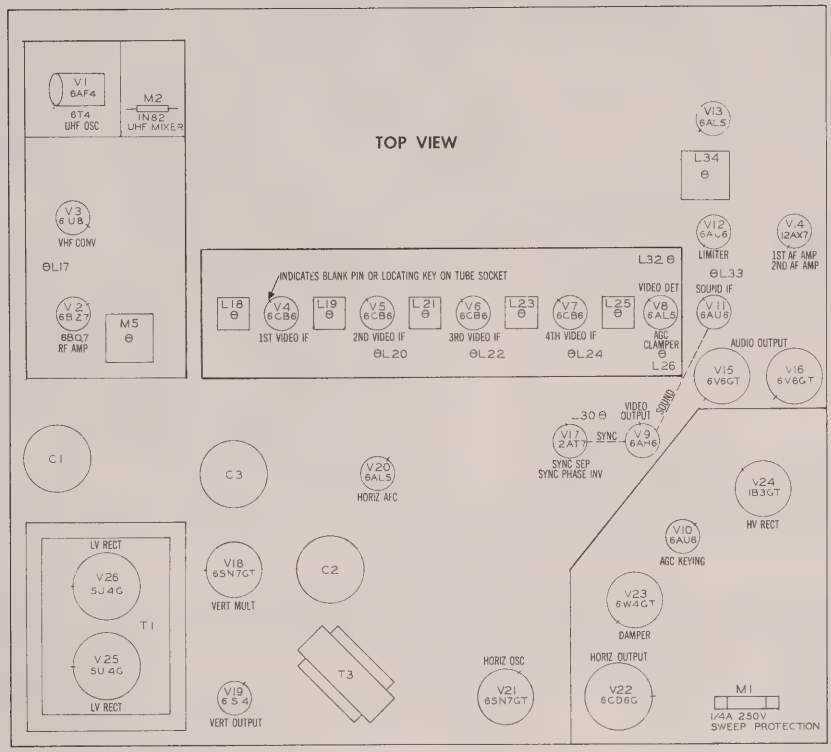

TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - V25, V26

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - V3, V4, V5, V6, V7, V8, (V1 UHF only)
No pic, no sound, has snow - V2, V3, V4
No pic, has sound, has raster - V9, V27
Has pic, no sound - V11, V12, V13, V14, V15, V16
Overloaded picture - V10

SYNC FAILURE
No vert. sync - V17, V18
No horiz. sync - V17, V20, V21
No vert. or horiz. sync - V17

SWEEP FAILURE
No raster, has sound - V21, V22, V23, V24, V27, Fuse (M1)
No vertical deflection - V18, V19
Poor vert. linearity or foldover - V18, V19
Poor horiz. linearity or foldover - V21, V22, V23
Narrow picture - V21, V22, V23, V24, V25, V26
Vert. off freq. - V17, V18
Horiz. off freq. - V17, V20, V21

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Allow a 15 minute warm-up period for receiver and test equipment.
The high voltage shock hazard may be eliminated by connecting the negative lead of a 60 volt bias supply to pin 5 (grid) of the horizontal output tube (6CD6). Connect the positive lead to chassis.
Connect a .001MFD capacitor across the vertical input terminals of the oscilloscope.
Tune the tuner to an off channel position by setting the channel selector shaft so that the detent roller rests on one of the high points of the drum disc.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	.005MFD	High side to pin 1 (grid) of 6AU6 (V11). Low side to chassis.	4.5MC (Unmod)	Any	DC probe thru 10KΩ to point Ⓐ. Common to chassis.	A1, A2, A3	Attenuate generator output to maintain 4 to 7 volts on VTVM. Adjust for maximum deflection.
2.	"	"	"	"	DC probe thru 10KΩ to point Ⓑ. Common to chassis.	A4	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60~ modulation and 450KC sweep. Use 120~ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.005MFD	High side to pin 1 (grid) of 6AU6 (V11). Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any	Vert. Amp. thru 10KΩ to point Ⓐ. Low side to chassis.	A1, A2, A3	Disconnect stabilizing capacitor C5. Adjust for curve of maximum amplitude and symmetry similar to Fig. 1.
2.	"	"	"	"	"	Vert. Amp. thru 10KΩ to point Ⓑ. Low side to chassis.	A4	Reconnect stabilizing capacitor C5. Adjust so that 4.5MC occurs at center of crossover lines as in Fig. 2. SLIGHTLY retouch A3 for maximum amplitude and straightness of crossover lines.

4.5MC TRAP ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
3.	.005MFD	High side to pin 1 (grid) of 6AH6 (V9). Low side to chassis.	4.5MC (Unmod)	Any	DC probe thru detector (Fig.3) to pin 11 (cathode) of picture tube. Low side to chassis.	A5	Adjust for MINIMUM deflection.

VIDEO IF ALIGNMENT

Turn the contrast control fully clockwise. Connect the negative lead of a 3 volt battery to the ungrounded side of C47. Connect the positive lead to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
4.	Direct	High side to an ungrounded tube shield floating over converter tube (V3). Low side to chassis.	39.75MC (Unmod)	Any	DC probe thru 10KΩ to point Ⓓ. Common to chassis.	A6	Adjust for MINIMUM deflection. Connect -60 volts to grid of horizontal output tube or remove high voltage fuse (M1) for remainder of alignment procedure.
5.	"	"	41.25MC	"	"	A7, A8	"
6.	"	"	47.25MC	"	"	A9	"
7.	"	"	42.5MC	"	"	A10	Attenuate generator output to maintain not more than 1 volt on VTVM. Adjust for maximum deflection.
8.	"	"	44.2MC	"	"	A11	"
9.	"	"	42.25MC	"	"	A12	"
10.	"	"	45.5MC	"	"	A13	"
11.	"	"	43.0MC	"	"	A14	"
12.	"	"	45.0MC	"	"	A15	Adjust for maximum deflection. Repeat steps 4 thru 12 until no further improvement is noted.

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
13.	Direct	High side to an ungrounded tube shield floating over converter tube (V3). Low side to chassis.	43.5MC (10MC Swp)	41.25MC 45.75MC	Any	Vert. Amp. thru 10KΩ to point Ⓓ. Low side to chassis.		Check for response curve similar to Fig.4. First, adjust A14 and A15 to obtain desired response. Then, if necessary, adjust A10 thru A13. A10 and A11 affects tilt A13 affects positioning of 45.75MC marker.

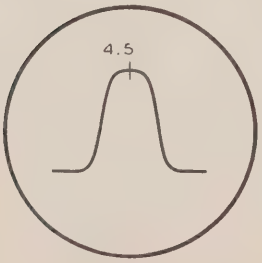

FIG.1

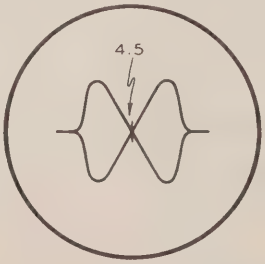

FIG.2

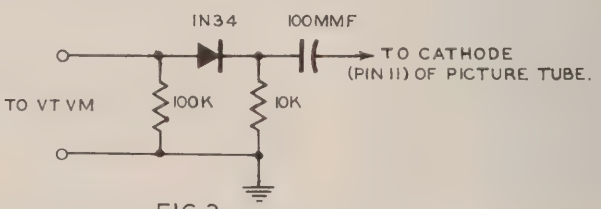

FIG.3

ALIGNMENT INSTRUCTIONS (cont)

VHF OSCILLATOR ALIGNMENT

Replace V3 tube shield to its original position. Complete oscillator alignment may not be necessary. If the oscillator seems to be off frequency approximately the same amount for a majority of the channels, it may be possible to correct them in one step using A16. It should be noted that this is an all channel oscillator circuit adjustment and should not be adjusted for any individual channel.
Switch tuner to VHF position and remove tuner knobs. With the fine tuning control near the center of its range the VHF channel oscillator adjustment screws are accessible through a hole just above and slightly to the left of the channels switch shaft. This hole extends through the UHF tuner only when the channel switch is set to the VHF position. The correct VHF channel adjustment screw is accessible through the hole as the channel switch is turned. to each channel. Leave bias connected as under video IF alignment and connect a jumper from the ungrounded side of C47 to the tuner AGC terminal.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
14.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. Amp. thru 10KΩ to point ⓓ. Low side to chassis.	A17	Adjust to place sound marker in trap notch as in Fig. 5. Video marker should be at 50%.
			207MC (10MC Swp)	205.25MC 209.75MC	12		A18	
			201MC (10MC Swp)	199.25MC 203.75MC	11		A19	
			195MC (10MC Swp)	193.25MC 197.75MC	10		A20	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A21	
			183MC (10MC Swp)	181.25MC 185.75MC	8		A22	
			177MC (10MC Swp)	175.25MC 179.75MC	7		A23	
			85MC (10MC Swp)	83.25MC 87.75MC	6		A24	
			79MC (10MC Swp)	77.25MC 81.75MC	5		A25	
			69MC (10MC Swp)	67.25MC 71.75MC	4		A26	
			63MC (10MC Swp)	61.25MC 65.75MC	3		A27	
			57MC (10MC Swp)	55.25MC 59.75MC	2		A28	

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VHF RF AND MIXER ALIGNMENT

The VHF RF and mixer portion of this receiver has been properly aligned at the factory and is very stable. Alignment of this portion of the receiver should not be required in the field.

UHF OSCILLATOR ALIGNMENT

Switch tuner to UHF portion and remove tuner knobs. The UHF channel oscillator adjustment screws are reached through a hole just above and slightly to the left of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel strip. Leave the bias connected as under "VHF oscillator alignment."
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
15.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	473MC (10MC Swp)	471.25MC 475.75MC	14	Vert. Amp. thru 10KΩ to point ⓓ. Low side to chassis	A29	Adjust to place sound marker in trap notch as in Fig. 5. Video marker should be at 50%.
			515MC (10MC Swp)	513.25MC 517.75MC	21		A30	
			575MC (10MC Swp)	573.25MC 577.75MC	31		A31	
			635MC (10MC Swp)	633.25MC 637.75MC	41		A32	
			695MC (10MC Swp)	693.25MC 697.75MC	51		A33	
			755MC (10MC Swp)	753.25MC 757.75MC	61		A34	
			815MC (10MC Swp)	813.25MC 817.75MC	71		A35	
			875MC (10MC Swp)	873.25MC 877.75MC	81		A36	

UHF AND RF MIXER ALIGNMENT

The UHF RF and mixer portion of this receiver has been properly aligned at the factory and is very stable. Alignment of this portion of the receiver should not be required in the field.

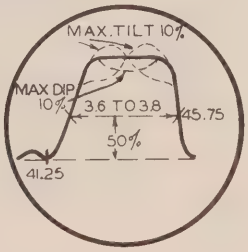


FIG.4

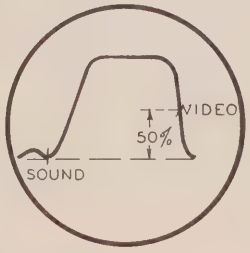
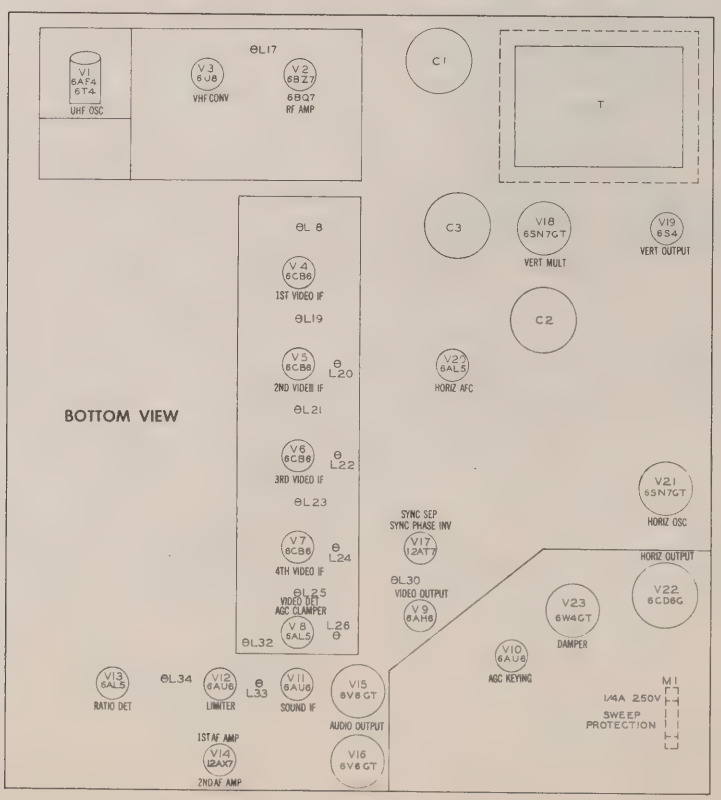


FIG.5

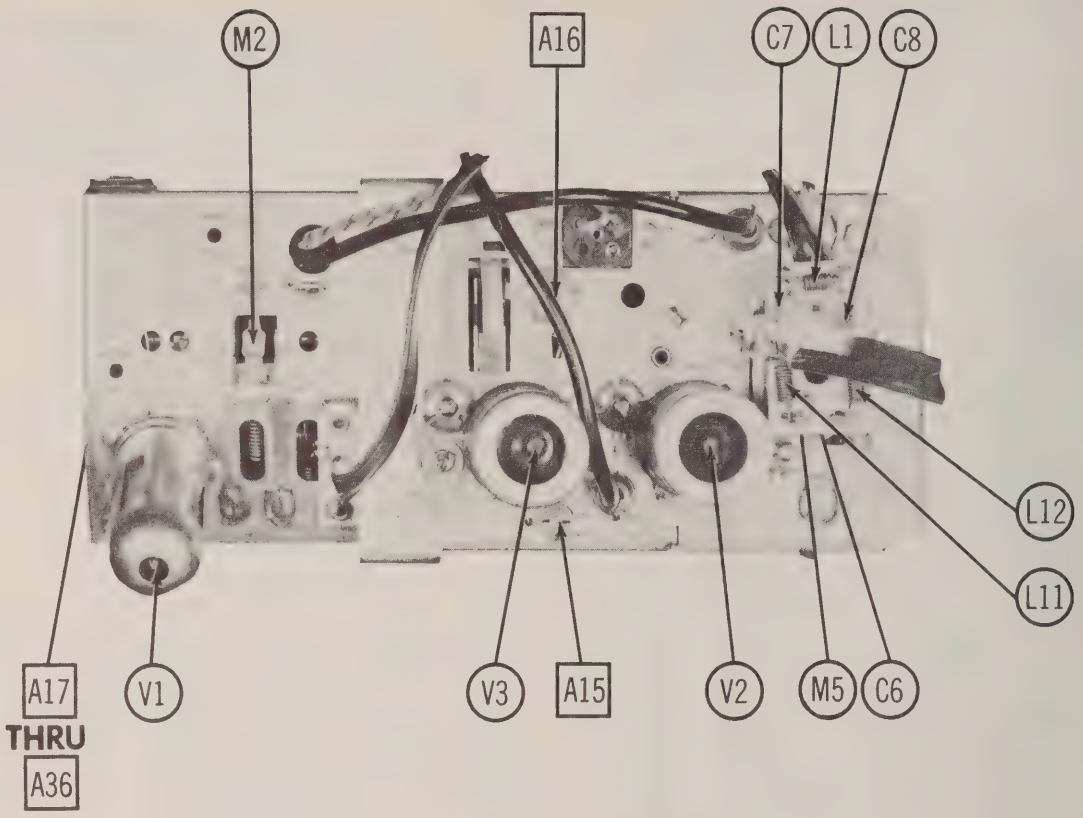
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AF4	†■6. 2KΩ	10KΩ	. 1Ω	0Ω	0Ω	10KΩ	†■ 6. 2KΩ		
V 2	6BZ7	† 1. 7KΩ	140KΩ	INF	0Ω	. 1Ω	INF	850KΩ	0Ω	0Ω
V 3	6U8	† 5. 2KΩ	200KΩ	† 110KΩ	. 1Ω	0Ω	† 9. 3KΩ	0Ω	0Ω	10KΩ
V 4	6CB6	70KΩ	47Ω	. 1Ω	0Ω	† 2. 7KΩ	† 2. 7KΩ	0Ω		
V 5	6CB6	. 3Ω	120Ω	. 1Ω	0Ω	† 2. 7KΩ	† 2. 7KΩ	0Ω		
V 6	6CB6	65KΩ	47Ω	. 1Ω	0Ω	† 2. 7KΩ	† 2. 7KΩ	0Ω		
V 7	6CB6	. 3Ω	180Ω	. 1Ω	0Ω	† 2. 7KΩ	† 2. 7KΩ	0Ω		
V 8	6AL5	. 3Ω	550KΩ	. 1Ω	0Ω	0Ω	0Ω	4. 7KΩ		
V 9	6AH6	4. 7KΩ	0Ω	0Ω	. 1Ω	† 7KΩ	† 1. 6KΩ	85Ω		
V 10	6AU6	† 52KΩ	† 1. 4KΩ	† 1. 4KΩ	† 1. 4KΩ	450KΩ	† 150Ω	† 1. 4KΩ		
V 11	6AU6	100KΩ	0Ω	0Ω	. 1Ω	† 3. 2KΩ	† 3. 2KΩ	390Ω		
V 12	6AU6	47KΩ	0Ω	0Ω	. 1Ω	† 7KΩ	† 4. 2KΩ	82Ω		
V 13	6AL5	INF	INF	. 1Ω	0Ω	0Ω	0Ω	20KΩ		
V 14	12AX7	† 470KΩ	520KΩ	6. 8KΩ	† 1. 4KΩ	† 1. 4KΩ	† 470KΩ	500K	8. 2KΩ	† 1. 4KΩ
V 15	6V6GT	† 1KΩ	0Ω	† 1. 3KΩ	† 670Ω	470KΩ	INF	. 1Ω	270Ω	
V 16	6V6GT	† 1KΩ	0Ω	† 950Ω	† 670Ω	470KΩ	† 190KΩ	. 1Ω	270Ω	
V 17	12AT7	† 4. 7KΩ	† 680KΩ	4KΩ	0Ω	0Ω	† 680KΩ	5. 2Meg	0Ω	. 1Ω
V 18	6SN7GT	4. 7Meg	◓ 180KΩ	1KΩ	1. 7Meg	◓ 680KΩ	1KΩ	. 1Ω	0Ω	
V 19	6S4	INF	2. 5KΩ	1 Meg	0Ω	. 1Ω	1 Meg	INF	INF	◓ 3. 3KΩ
V 20	6AL5	22Ω	22Ω	0Ω	. 1Ω	5. 3Meg	0Ω	5. 3Meg		
V 21	6SN7GT	4. 7Meg	† 9. 3KΩ	1. 5KΩ	95K	† 180KΩ	1. 5KΩ	. 1Ω	0Ω	
V 22	6CD6G	◓ 37Ω	0Ω	120Ω	5. 7KΩ	330KΩ	◓ 1. 5KΩ	. 1Ω	† 18. 2KΩ	TOP CAP ◓ 19Ω
V 23	6W4GT	INF	INF	1 Meg	INF	† 160Ω	450KΩ	◓ 33Ω	◓ 33Ω	
V 24	1B3GT	PINS 1-8 HAVE INF. RESISTANCE								TOP CAP ◓ 470Ω
V 25	5U4G	INF	13KΩ	INF	13Ω	INF	14Ω	INF	13KΩ	
V 26	5U4G	INF	13KΩ	INF	13Ω	INF	14Ω	INF	13KΩ	
V 27	21ZP4A	† 1. 4KΩ	† 50KΩ	PIN 10 † 1. 5KΩ	PIN 11 † 150KΩ	PIN 12 † 1. 4KΩ				

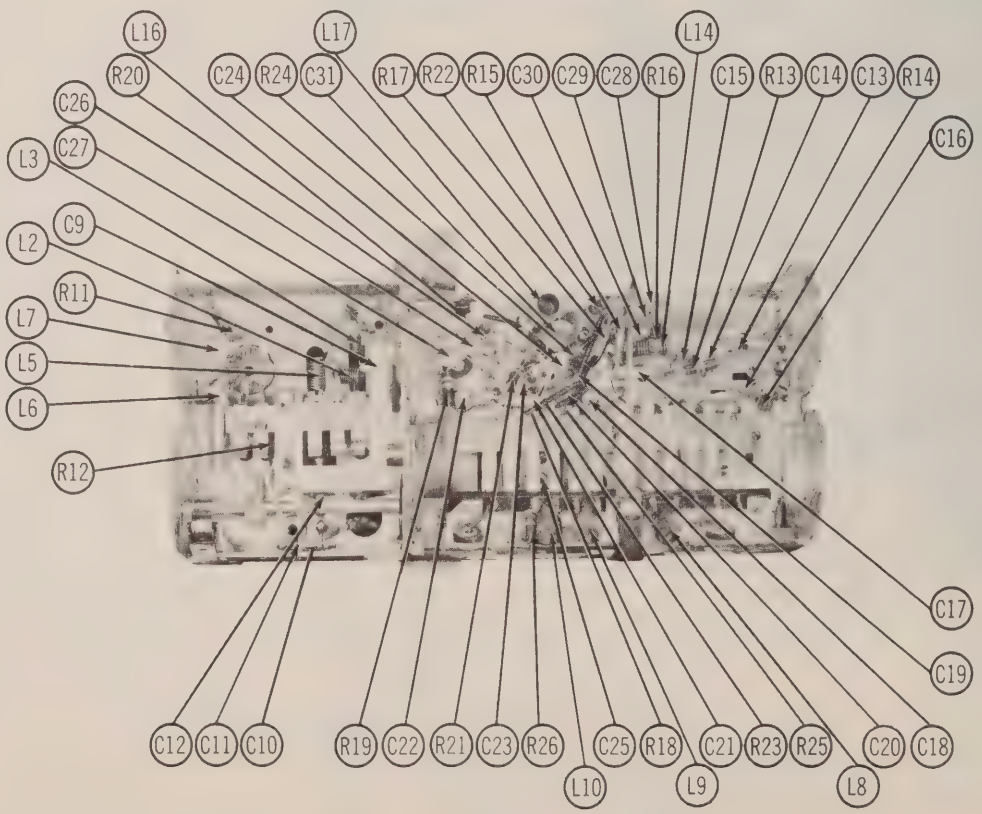
■ MEASURED IN UHF POSITION
† MEASURED FROM C1A
◓ MEASURED FROM PIN 3 OF V23



TUBE PLACEMENT CHART



UHF-VHF TUNER-TOP VIEW



UHF-VHF TUNER-BOTTOM VIEW

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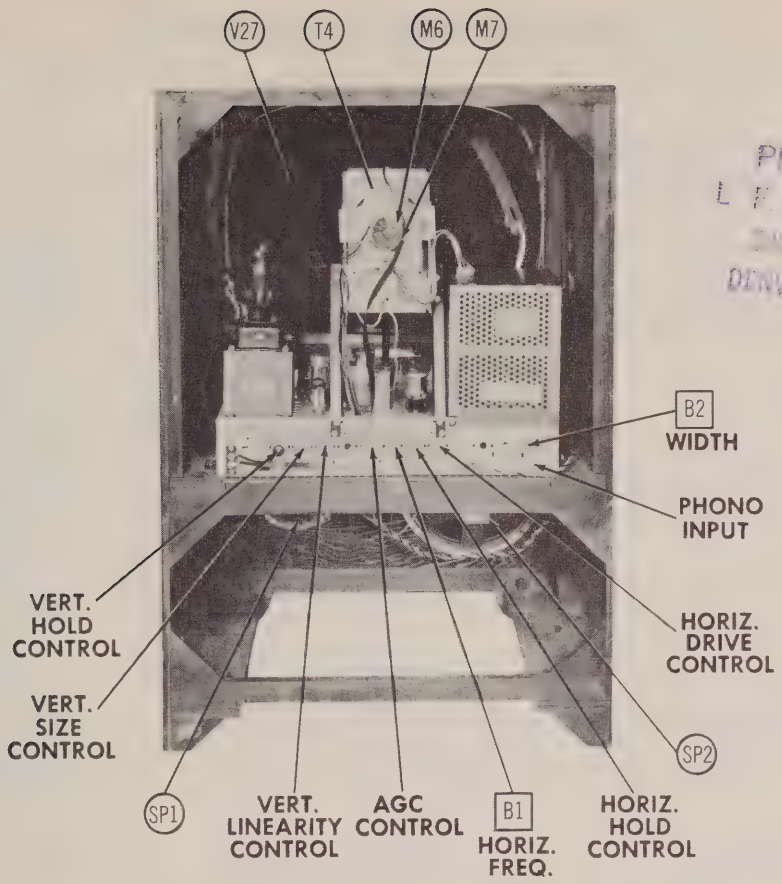
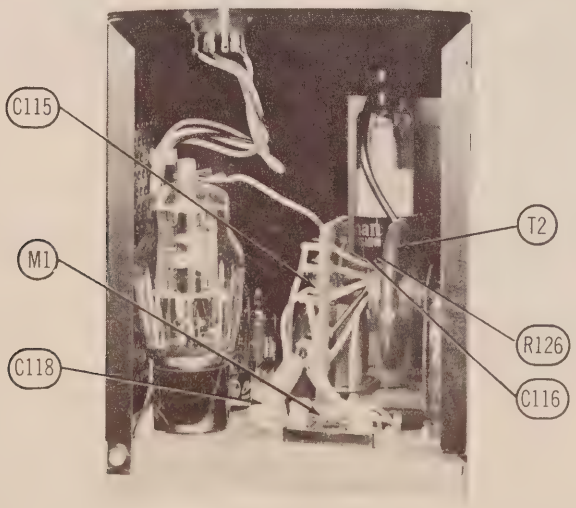


CABINET REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.
Rotate the horizontal drive control clockwise as far as possible without the presence of vertical white lines or compression near the center of the picture.
Set the horizontal hold control to its mid-range position.
Adjust the horizontal frequency slug (B1) counter clockwise while switching on and off channel until picture loses sync.
Turn B1 clockwise and note the number of diagonal bars just before picture pulls into sync. There should not be less then two bars if the horizontal section is operating normally. Continue turning B1 clockwise, while switching on and off channel, until sync is lost again, then turn B1 counter clockwise and note the point where picture pulls into sync.
Turn B1 an additional half turn counter clockwise.
Adjust the width slug (B2) for a picture slightly wider than necessary to fill the picture mask horizontally.



HIGH VOLTAGE COMPARTMENT

SET 249 FOLDER 8

TROUBLE SHOOTING AIDS

SWEEP

HORIZONTAL

LOSS OF SWEEP

Follow procedure outlined under "Loss of High Voltage".

INSUFFICIENT SWEEP

Check by substitution V22, V23, V25 and V26. Check R10 and B2 for proper adjustment. Check T2, T4A, R125, C110, C109 and other associated components.

DRIVE LINES

Check by substitution V21, V22 and V23. Check R10, C110, T2, T4A, C111, C112, T5 and other associated components.

COMPRESSED LEFT SIDE

Check by substitution V22 and V23. Check the horizontal output and damper stages for component failure or change of value.

FOLDS

Follow procedure outlined under "Drive Lines".

PIE CRUST EFFECT

Check by substitution V21, V22 and V23. Check components of V21, especially C105 for open.

XMAS TREE EFFECT

Check by substitution V21, V22 and V23. Check L35, C106, C107 and R117. Check T2 and T4A for internal arcing.

VERTICAL

LOSS OF SWEEP

Check by substitution V18 and V19. Check waveform W8.

If Satisfactory	If Unsatisfactory
Check C99, C100, T3, T4B, R6, R106, R7 and other associated components.	Check C97, R102, R104, R108 and other associated components.

INSUFFICIENT SWEEP

Check by substitution V18 and V19. Check vertical size and vertical linearity controls for proper adjustment. Check components associated with V18 and V19.

COMPRESSED AT BOTTOM

Check by substitution V18 and V19. Check R6, R107, and other associated components.

COMPRESSED AT TOP

Check by substitution V18 and V19. Check R7, R106, C1D and other associated components.

FOLDS

Check by substitution V18 and V19. Check C96, C98, R105 and other associated components.

SYNC

LOSS OF VERTICAL AND HORIZONTAL SYNC

Substitute V17. Check R58, R92, R97, R96, C92, C93 and other associated components.

LOSS OF VERTICAL SYNC-HORIZONTAL SYNC SATISFACTORY

Check by substitution V17 and V18. Check waveform W7.

If Satisfactory	If Unsatisfactory
Check components associated with V18 for failure or change of value.	Check vertical integrator network and other associated components. Check video IF alignment for overloading.

LOSS OF HORIZONTAL SYNC-VERTICAL SYNC SATISFACTORY

Check by substitution V20 and V21. Check C102, C103, L35, R115, R112, R113, R114 and other associated components.

HORIZONTAL BENDING

Check by substitution V10, V17, V20 and V21. Check horizontal AFC network for component failure or change of value.

VIDEO

LOSS OF VIDEO

Substitute V9. Check components associated with V9. Check picture tube.

SOUND BARS (4.5MC Beat)

Adjust tuner fine tuning for best picture and sound. Check adjustment A5. Check video IF alignment.

POOR CONTRAST

Substitute V9. Check components associated with V9. Check picture tube. Check video detector.

NEGATIVE PICTURE

Substitute V9. Check picture tube. Check AGC network.

SMEAR

Substitute V9. Check L29, L31, C63, C62, R51 and other associated components.

WIDE BLACK BAR ACROSS PICTURE

Check by substitution V2, V4, V5, V6, V7, V8 and V9 for heater to cathode leakage.

AUDIO

WEAK OR NO SOUND

Check by substitution V11, V12, V13, V14, V15 and V16. Check stages V14, V15 and V16, using audio signal generator. Apply audio signal across R1B.

If Satisfactory	If Unsatisfactory
Check the ratio detector network. Check audio IF associated components.	Check switch on R3 to see if in TV position. Check T6, C90, C91, C88, R89, R84, R83 and other associated components.

BUZZ

Adjust tuner fine tuning for best sound and picture. Check adjustment A4 for minimum buzz. Check C5 and other associated components.

DISTORTED

Follow procedure outlined under "Weak or No Sound".

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		HOFFMAN PART No.	STANDARD REPLACEMENT		
V1	UHF Oscillator	6AF4	6AF4	7DK	
	UHF Oscillator	6T4	6T4	7DK	Used in some models
V2	VHF RF Amp.	6BZ7	6BZ7	9AJ	
	VHF RF Amp.	6BQ7A	6BQ7A	9AJ	Used in some models
V3	VHF Converter	6U8	6U8	9AE	
V4	1st. Video IF Amp.	6CB6	6CB6	7CM	
V5	2nd. Video IF Amp.	6CB6	6CB6	7CM	
V6	3rd. Video IF Amp.	6CB6	6CB6	7CM	
V7	4th. Video IF Amp.	6CB6	6CB6	7CM	
V8	Video Det.-AGC Clamper	6AL5	6AL5	6BT	
V9	Video Output	6AH6	6AH6	7BK	
V10	AGC Keying	6AU6	6AU6	7BK	
V11	Sound IF Amp.	6AU6	6AU6	7BK	
V12	Limiter	6AU6	6AU6	7BK	
V13	Ratio Detector	6AL5	6AL5	6BT	
V14	1st. AF Amp.- 2nd. AF Amp.	12AX7	12AX7	9A	
V15	Audio Output	6V6GT	6V6GT	7S	
V16	Audio Output	6V6GT	6V6GT	7S	
V17	Sync Separator - Sync Phase Inv.	12AT7	12AT7	9A	
V18	Vert. Mult.	6SN7GT	6SN7GT	8BD	
V19	Vert. Output	6S4	6S4	9AC	
V20	Horiz. AFC	6AL5	6AL5	6BT	
V21	Horiz. Osc.	6SN7GT	6SN7GT	8BD	
V22	Horiz. Output	6CD6G	6CD6G	5BT	
V23	Damper	6W4GT	6W4GT	4CG	
V24	HV Rectifier	1B3GT	1B3GT	3C	
V25	LV Rectifier	5U4G	5U4G	5T	
V26	LV Rectifier	5U4G	5U4G	5T	

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CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA					RETMA BASE TYPE	NOTES
	HOFFMAN PART No.	CBS-HYTRON PART No.	GENERAL ELECTRIC PART No.	SYLVANIA PART No.	WESTINGHOUSE PART No.		
V27A	21ZP4			21ZP4	21ZP4	12D	
	21ZP4A	21ZP4A 21ZP4B	21ZP4A	21ZP4A 21ZP4B	21ZP4A	12N 12B	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	HOFFMAN PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	■40	350	4251	E4D657					TVL-4634	
B	▲100	350								
C	▲30	350								
D	50	50								
C2A	▲60	350	4259	AFH3-29		C023		FP447	TVL-3640	Note 1
B	■40	350								Note 1
C	▲20	350								
C3A	▲40	350	4252	AFH4-75		D061		FP430.2	TVL-4734	
B	▲10	350								
C	■20	350								Note 1
D	25	25								Note 2
C4	10	600	4253	PRS600/10		BRHV610		TC92	R1222	
C5	5	50	4209	PRS150/4		BR550		TC30	TVA-1303	
C6	1.5			SI1.5NP0	TCZ-1.5	Z004	NP0K-1R5	ZT-5515	5TCCB-V15	
C7	2.2			SI2.2NP0	TCZ-2.2	Z006	NP0K-2R2		5TCCB-V22	
C8	2.2			SI2.2NP0	TCZ-2.2	Z006	NP0K-2R2		5TCCB-V22	
C9A	1									
B	3									
C10	800			EF-001	MFT-1000				503C-D1	
C11	800			EF-001	MFT-1000				503C-D1	
C12	10									
C13	6.8			SI6.8NP0	TCZ-6.8	Z013	NP0K-6R8	ZT-5568	5TCCB-V68	
C14	.5-3				829-3		3115-01-0R5	CT565A		
C15	3			SI3NP0	TCZ-3	Z007	NP0K-030	ZT-553	5TCCB-V3	
C16	1500			BPD-0015	DD-152	K071	801-001	DC-5215	5HK-D15	
C17	800			EF-001	MFT-1000				503C-D1	
C18	.5-3				829-3		3115-01-0R5	CT565A		
C19	1.5			SI1.5NP0	TCZ-1.5	Z004	NP0K-1R5	ZT-5515	5TCCB-V15	
C20	47			BPD-000047	D6-470	G033	801-470	UC-5447	5GA-Q47	
C21	47									
C22	.5-3				829-3		3115-01-0R5	CT565A		
C23	5			SI5NP0	TCZ-4.7	Z011	NP0K-050	ZT-555	5TCCB-V47	
C24	10			SI10N750	TCN-10	N018	N750K-100	NT-541	5TCU-Q1	
C25	.5-3				829-3		3115-01-0R5	CT565A		
C26	1500			BPD-0015	DD-152	K071	801-0015	DC-5215	5HK-D15	
C27	220			BPD-00022	D6-221	G051	GP2K-221	UC-5322	5GA-T22	
C28	800			EF-001	MFT-1000				503C-D1	
C29	800			EF-001	MFT-1000				503C-D1	
C30	800			EF-001	MFT-1000				503C-D1	
C31	68			SI68N750	TCN-68	N038	N750K-680	NT-5468	5TCU-Q68	
C32	.22	200	4131	P488-22		CUB4P22		PT4022	4TM-P22	
C33	5000		4029	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C34	5000			BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	Note 2
C35	470			SI470	D6-471	TP46	GP2K-471	UC-5347	5GA-T47	Note 3
C36	1500		14030	BPD-0015	DD-152	K071	801-0015	DC-5215	5HK-D15	
C37	470		14050	SI470	D6-471	TP46	GP2K-471	UC-5347	5GA-T47	
C38	1500		14030	BPD-0015	DD-152	K071	801-0015	DC-5215	5HK-D15	
C39	1.5		4082	SI1.5NP0	TCZ-1.5	TZ04	NP0K-1R5	ZT-5515	5TCCB-V15	
C40	20	500		1468-00002		22R5Q2			MS-42	
C41	470		14050	SI470	D6-471	TP46	GP2K-471	UC-5347	5GA-T47	
C42	470		14050	SI470	D6-471	TP46	GP2K-471	UC-5347	5GA-T47	
C43	1500		14030	BPD-0015	DD-152	K071	801-0015	DC-5215	5HK-D15	
C44	5		14051	SI5NP0	TCZ-4.7	TZ07	NP0K-050	ZT-555	5TCCB-V47	

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (cont)

ITEM No.	RATING CAP.	RATING VOLT	HOFFMAN PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C45	100	500		1469-0001		2ER5T1		MC2235	MS-31	
C46	1500		14030	BPD-0018	DD-152	K071	801-0015	DC-5215	5HK-D15	
C47	1.0	100	14200	484-1.0		CUB3W1		PT61	3TM-M1	
C48	5000		4029	BPD-005	DD-502	K080	81J-005	DC-525	5HK-D5	
C49	470		14050	SI470	D6-471	TP46	GP2K-471	UC-5347	5GA-T47	
C50	1500		14030	BPD-0015	DD-152	K071	801-0015	DC-5215	5HK-D15	
C51	1.5		4082	SIL5NP0	TCZ-1.5	TZ04	MP0K-1R5	ZT-5515	5TCCB-V15	
C52	100	500	14050	1469-0001		2ER5T1		MC2235	MS-31	
C53	470		14050	SI470	D6-471	TP46	GP2K-471	UC-5347	5GA-T47	
C54	1500		14030	BPD-0015	DD-152	K071	801-0015	DC-5215	5HK-D15	
C55	1500		14030	BPD-0015	DD-152	K071	801-0015	DC-5215	5HK-D15	
C56	1500		14030	BPD-0015	DD-152	K071	801-0015	DC-5215	5HK-D15	
C57	1.5		4082	SIL5NP0	TCZ-1.5	TZ04	MP0K-1R5	ZT-5515	5TCCB-V15	
C58	10	500		1469-00002		2ER5Q2			MS-42	
C59	1500		14030	BPD-0015	DD-152	K071	801-0015	DC-5215	5HK-D15	
C60	5.1		14051	SI5NP0	TCZ-4.7	TZ07	MP0K-050	ZT-555	5TCCB-V47	
C61	5000		4029	BPD-005	DD-502	K080	81J-005	DC-525	5HK-D5	
C62	47			SI47MP0	TCZ-47	TZ23	MP0K-470	ZT-5447	5TCC-Q47	
C63	.22	200	4131	P288-22		CUB4P22		PT4022	4TM-P22	
C64	.1	200	4163	P288-1	DF-104	CUB2P1		PT401	2TM-P1	
C65	5000		4029	BPD-005	DD-502	K080	81J-005	DC-525	5HK-D5	
C66	1500		14030	BPD-0015	DD-152	K071	801-0015	DC-5215	5HK-D15	
C67	15		14052	SI15	DD-150	TP11	GP1K-150	UC-5415	5GA-Q15	
C68	5000		4029	BPD-005	DD-502	K080	81J-005	DC-525	5HK-D5	
C69	1500		14030	BPD-0015	DD-152	K071	801-0015	DC-5215	5HK-D15	
C70	5000		4029	BPD-005	DD-502	K080	81J-005	DC-525	5HK-D5	
C71	47		14057	SI47	D6-470	TP39	GP1K-470	UC-5447	5GA-Q47	
C72	5000		4029	BPD-005	DD-502	K080	81J-005	DC-525	5HK-D5	
C73	5000		4029	BPD-005	DD-502	K080	81J-005	DC-525	5HK-D5	
C74A B	4000 4000		4084	BPD-32004	D6-402 D6-403	GA8P8	832-006	DCD-5324	5HK-3Q4	
C75	5000		4029	BPD-005	DD-502	K080	81J-005	DC-525	5HK-D5	
C76	330		4065	SI330	D6-331	TP43	GP2K-331	UC-5333	5GA-T33	
C77	.0047	400	4127	P288-0047	D6-472	CUB6D47	GP2-333-472	PT6247	6TM-D47	
C78	.0047	400	4127	P288-0047	D6-472	CUB6D47	GP2-333-472	PT6247	6TM-D47	
C79	.100		4079	SI100	D6-101	TP34	GP1K-101	UC-531	5GA-T1	
C80	.1	200	4163	P288-1	DF-104	CUB2P1		PT401	2TM-P1	
C81	.001	400	4119	P288-001	D6-102	CUB4D1	GP3L-103	PT641	6TM-Q1	
C82	.0082	400	4189							
C83	.1	200	4163	P288-1	DF-104	CUB2P1		PT401	2TM-P1	
C84	.0082	400	4189							
C85	.01	400	4134	P488-01	D6-103	CUB4E1	GP3-333-103	PT641	6TM-E1	
C86	.01	400	4134	P488-01	D6-103	CUB4E1	GP3-333-103	PT641	6TM-E1	
C87	.1	200	4143	P288-1	DF-104	CUB2P1		PT401	2TM-P1	
C88	.047	200	4147	P288-047	DF-503	CUB2S47		PT2147	2TM-S47	
C89	.047	400	4147	P488-047	DF-503	CUB4S47		PT6147	6TM-S47	
C90	180	500	4070	1468-0002		5W5T1R		MC237	1FM-32	
C91	180	500	4070	1468-0002		5W5T1R		MC237	1FM-32	
C92	.0022	400	4138	P688-0022	D6-222	CUB6D22	GP2-333-222	PT6222	6TM-D22	
C93	220		4026	SI220	D8-221	TP39	GP2K-221	UC-5322	5GA-T22	
C94	.0047	400	4127	P688-0047	D6-472	CUB6D47	GP2-333-472	PT6247	6TM-D47	
C95A	.002							PT622		
B	.005		±9695	+PA-1i0	+PC-100	+115TMQ	+1405-01	PT625	+V-1	
C	.005							PT625		
C96	.047	200	4158	P288-047	DF-503	CUB2S47		PT2147	2TM-S47	
C97	.0039	500	14123	1464-004		1R5D39		MC2463	MS-24	
C98	.1	600	14133	P988-1	DF-104	CUB9P1		PT601	9TM-P1	
C99	.1	600	4144	P988-1	DF-104	CUB9P1		PT601	9TM-P1	
C100	.047	600	4153	P988-047	DF-503	CUB9S47		PT6147	6TM-S47	
C101	.022	600	4124	P688-022	DF-203	CUB6D22	817-02	PT6222	6TM-D22	
C102	.001	1400	4175	1479-001		1R5D1		MC8255	MS-21	
C103	.001	400	4175	1479-001		1R5D1		MC8255	MS-21	
C104	.0047	600	4127	P688-0047	D6-472	CUB6D47	GP2-333-472	PT6247	6TM-D47	
C105	.047	200	4147	P288-047	DF-503	CUB2S47		PT2147	2TM-S47	
C106	3900	500	4085	1464-004		1R5D39		MC8463	MS-24	
C107	100	500	14000	1469-0005		5W5T47		MC8245	MS-35	
C108	.001	600	14104	1479-001		1R5D1		MC8255	MS-21	
C109	470	500	14009	1468-0005		5W5T47		MC8245	MS-35	
C110	.0047	600	4128	P688-0047	D6-472	CUB6D47	GP2-333-472	PT6247	6TM-D47	
C111	.1	600	4144	P988-1	DF-104	CUB9P1		PT601	9TM-P1	
C112	.47	200	4173	P288-47		CUB2P47		PT2047	2TM-P47	
C113	.0047	600	4128	P688-0047	D6-472	CUB6D47	GP2-333-472	PT6247	6TM-D47	
C114	.22	400	14103	P488-22		CUB4P22		PT4022	4TM-P22	
C115	500	1500								
C116	500	20000	4056	HV20C	TV3-502	MMU20T5	413	HV20035A	20DK-T5	
C117	.1	600	14133	P988-1	DF-104	CUB9P1		PT601	9TM-P1	
C118	.033	600	14127	P988-033		PMS33		PT6133		
C119	47			HVD30-000047			3KV-470		3GA-Q47	
C120	.1	600	4144	P988-1	DF-104	CUB9P1		PT601	9TM-P1	
C121	.01	600	4135	689ZX-01		CUB6E1		PT611	6TM-E1	
C122	.01	600	4135	689ZX-01		CUB6E1		PT611	6TM-E1	
C123	.47	500		1469-00005		2ER5Q47		MC8255	MS-45	

Note 1. Not used in chassis 401-21.
Note 2. Not used in all models.
Note 3. Some models use 10000MMF in this application.
* Items C95A, C95B, C95C, R98A, R98B, R98C are combined in one unit.

CONTROLS

ITEM No	RATING RESISTANCE	RATING WATTS	HOFFMAN PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1500Ω	½	H-4903	* QJ-535			UF152R	Contrast- Panel - Note 1
B	1 Meg	½					URUT235 †	Volume and ② 200K- Rear
C	Switch						US26	Attach to R1B
R2A	500KΩ	½	H-4905	Q15-133	A47-500K-Z	B5K-50	U-48	Bass - Note 2
B	Shaft		Not Req.	Not Req.	KS8-3	Not Req.	Not Req.	Attach to R2A
R3	50KΩ	½	H-4908					Brightness & phono switch
R4A	1 Meg	½	H-4913	Q13-137	A47-1 Meg-Z	B8K-10	U-53	Treble - Note 2
B	Shaft		Not Req.	Not Req.	KS8-3	Not Req.	Not Req.	Attach to R4A
R5A	1 Meg	½	H-4632-2	Q11-157	A47-1 Meg-S	AB-59	U-54	Vert. Hold
B	Shaft		Not Req.	Not Req.	KS803	AK-4	Not Req.	Attach to R5A
R6A	2 Meg	½	H-4864	Q11-139	A47-2Meg-S	AB-75	SU-56	Vert. size
B	Shaft		Not Req.	Not Req.	FK3-1/4	AK-1	Not Req.	Attach to R6A
R7A	5000Ω	½	H-4865	Q11-14	A47-5000-S	AB-10	SU-14	Vert. Linearity
B	Shaft		Not Req.	Not Req.	FK3-1/4	AK-1	Not Req.	Attach to R7A

CONTROLS (cont)

ITEM No.	RATING RESISTANCE	RATING WATTS	HOFFMAN PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R8A	50KΩ	½	H-4853	Q11-123	A47-50K-A	AB-51	SU-35	AGC
B	Shaft		Not Req.	Not Req.	FK8-1/4	AK-1	Not Req.	Attach to R8A
R9A	25KΩ	½	H-4850	Q11-130	A47-25K-S	AB-38	SU-39	Horiz. Hold
B	Shaft		Not Req.	Not Req.	FK3-1/4	AK-1	Not Req.	Attach to R9A
R10A	25KΩ	½	H-4859	Q11-130	A47-25K-S	AB-26	SU-29	Horiz. Drive
B	Shaft		Not Req.	Not Req.	FK3-1/4	AK-1	Not Req.	Attach to R10A

* CONCENTRIKIT EQUIVALENT KIT K-2 BASE ELEMENTS & SHAFTS B17-109 & P1-204 (Panel)
B13-137A & RI-323 (Rear) & SWITCH 76-2.

† UNIVERSAL REPLACEMENT (Mallory exact duplicate Part No. UE-2015)
Note 1. Chassis 401-21 uses a 500KΩ ragged control Hoffman Part # H-4907.
Note 2. Chassis 401-21 uses a 1 Meg tone control Hoffman Part # H-3890.

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	HOFFMAN PART No.	IRC PART No.	NOTES
R11	1MΩ	½		BTS-10M	
R12	1000Ω	½		BTS-1000	
R13	22KΩ	½		BTS-22K	
R14	47KΩ	½		BTS-47K	
R15	270KΩ	½		BTS-270K	
R16	180KΩ	½		BTS-180K	
R17	680Ω	½		BTS-680	
R18	15KΩ	½		BTS-15K	
R19	100KΩ	½		BTS-100K	
R20	100KΩ	½		BTS-100K	
R21	100KΩ	½		BTS-100K	
R22	82000Ω	½		BTS-82K	
R23	10MΩ	½		BTS-10M	
R24	33000Ω	½		BTA-3300	
R25	33000Ω	½		BTS-3300	
R26	4700Ω	½		BTS-4700	
R27	10000Ω	½		BTS-1000	
R28	47KΩ 5%	½	4537	BTS-47K 5%	
R29	470Ω	½		BTS-470	Note 4
R30	470Ω	½	4664	BTS-470	
R31	47Ω	½	4639	BTS-47	
R32	470Ω	½	4664	BTS-470	
R33	15KΩ	½	4521	BTS-15K	
R34	47KΩ 5%	½	4537	BTS-47K 5%	
R35	1200	½	4546	BTS-1200	
R36	470Ω	½	4664	BTS-470	
R37	33000 5%	½	4654	BTS-3300 5%	
R38	470Ω	½	4664	BTS-470	
R39	3300Ω	½	4607	BTS-3300	
R40	47Ω	½	4639	BTS-47	
R41	470Ω	½	4664	BTS-470	
R42	82000 5%	½		BTS-8200 5%	
R43	180Ω	½	14618	BTS-180	
R44	470Ω	½	4664	BTS-470	
R45	12KΩ 5%	½	4656	BTS-12K 5%	
R46	L 8Meg 5%	½	34612	BTS- L 8Meg 5%	
R47	22KΩ	½	4528	BTS-22K	
R48	47000 5%	½	4649	BTS-47000 5%	
R49	680Ω	½	4514	BTS-680	
R50	1500Ω	½	4650		
R51	120KΩ	½	4548	BTS-120K	
R52	22KΩ	½	4501	BTS-22K	
R53	15KΩ	½	4521	BTS-15K	
R54	47KΩ	½	4504	BTS-47K	
R55	1 Meg	½	4564	BTS-1 Meg	
R56	39000 5%	1	24550	BTA-3900 5%	
R57	330KΩ	1	34532	BTS-330K	
R58	27KΩ	1	24618	BTS-27K	
R59	330KΩ	1	34532	BTS-330K	
R60	470KΩ	1	34550	BTS-470K	
R61	100KΩ	1	4511	BTS-100K	
R62	3900	1	4549	BTS-390	
R63	1000Ω	1	4542	BTS-1000	
R64	470Ω	1	4664	BTS-470	
R65	47KΩ	1	4504	BTS-47K	
R66	62Ω	1	4598	BTS-62	
R67	1000Ω	1	4542	BTS-1000	
R68	6800Ω	1	4608	BTA-6800	
R69	10KΩ	1	4644	BTA-10K	
R70	270Ω	1	4683	BTS-270	
R71	15KΩ	1	4531	BTS-15K	
R72	10KΩ	1	4597	BTS-10K	
R73	10KΩ	1	4597	BTS-10K	

ITEM No.	RATING OHMS	RATING WATT	HOFFMAN PART No.	IRC PART No.	NOTES
R74	4700Ω	½	4570	BTS-4700	
R75	10KΩ	½	4597	BTS-10K	
R76	8200Ω	½	4651	BTS-8200	
R77	2700Ω	½	4602	BTS-2700	
R78	270KΩ	½	4602	BTS-270K	
R79	56KΩ	½	24552	BTS-56K	
R80	22KΩ	½	4528	BTS-22K	
R81	6800Ω	½	4567	BTS-6800	
R82	270KΩ	½	4602	BTS-270K	
R83	220KΩ	½	4618	BTS-220K	
R84	10KΩ	½	4597	BTS-10K	
R85	470KΩ	½	4622	BTS-470K	
R86	270Ω	2	14639		
R87	3300Ω	1	4528	BTA-3300	
R88	470KΩ	1	4622	BTS-470K	
R89	270Ω	1	14639		
R90	470KΩ	1	4622	BTS-470K	
R91	4.7Meg	1	4544	BTS-4.7Meg	
R92	680KΩ	1	34558	BTS-680K	
R93	18000 5%	1	24517	BTS-1800 5%	
R94	18000 5%	1	24517	BTS-1800 5%	
R95	3900	1	4549	BTS-390	
R96	22000 5%	1	24525	BTS-2200 45%	
R97	22000 5%	1	34525	BTS-2200 5%	
R98A	22KΩ	½		BTS-22K	
B	8300Ω	½	) ± 9695	BTS-8200	
C	8200Ω	½		BTS-8200	
R99	4.7Meg	½	34659	BTS-4.7Meg	
R100	4.7Meg	½	34659	BTS-4.7Meg	
R101	1000Ω	½	4559	BTS-1000	
R102	180KΩ	1	34507	BTA-180K	
R103	1.2Meg	1	34593	BTS-1.2Meg	
R104	680KΩ	1	34571	BTA-680K	
R105	5600Ω	1	4629	BTS-5600	
R106	470Ω	1	4664	BTS-470	
R107	150KΩ	1	24597	BTA-150K	
R108	15000Ω	1	4553	BTA-1500	
R109	560Ω	½		BTS-560	
R110	560Ω	½		BTS-560	
R111	1000Ω	½		BTS-1000	
R112	100KΩ	½	4571	BTS-100K	
R113	100KΩ	½	4571	BTS-100K	
R114	470KΩ	½	4508	BTS-470K	
R115	1000Ω	½	4559	BTS-1000	
R116	4.7Meg	½	4544	BTS-4.7Meg	
R117	150Ω	1	4610	BTS-150	
R118	8200Ω	1	4651	BTS-8200	
R119	82KΩ	1	24670	BTS-82K	
R120	180KΩ	1	4634	BTS-180K	
R121	330KΩ 5%	½		BTS-330K 5%	Note 3
R122	1000	1	4566	BTS-100	
R123	5600Ω	1	4629	BTS-5600	
R124	1200	2	4657		
R125	18KΩ	2	4631	BTB-18K	
R126	3.9Ω	1	4751		
R127	22Ω	2	14529		
R128	150Ω	10	4771		
R129	150Ω	10	4771		
R130A	100Ω	10	} 4773		
B	800Ω	10			
R131	270Ω	2	14639		Note 3
R132	270Ω	2	14613		Note 3
R133	2700	2		BTB-270	Note 5

* Items R98A, R98B, R98C, C95A, C95B, C95C are combined in one unit.
Note 1. Some models may use a 270Ω resistor in this application①
Note 2. Some models may use a 470KΩ resistor in this application.
Note 3. Used in chassis 401-21 only.
Note 4. Some models may use a 10KΩ resistor in this application.
Note 5. Not used in all models.

TRANSFORMER (POWER)

ITEM No	RATING PRI	RATING SEC 1	RATING SEC 2	HOFFMAN PART No.	Stancor PART No	Merit PART No	Triad PART No	RCA TYPE No	Halldorson PART No	Thordarson PART No
T1	117 VAC ② 2.42A	596VCT ② .340ADC	5VAC ② 6A	H-5038						
	SEC. 3	SEC. 4	SEC. 5							
	6. 3VAC ② 1. 2A	6. 3VAC ② 1. 2A	6. 3VAC ② 10. 2A							

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	HOFFMAN PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	RCA TYPE No.	Halldorson PART No.	Thordarson PART No.
T2	Horiz. Output Trans	5184	A-8127 & WC-3 *	HV0-9 *	D-19 *	230T1 *	FB41I *	
T3	Vert. Output Trans.	5157	A-8141	A-3039	A-104X	228T1	21806	28654
T4A	Yoke-Horiz (19MGII)	9729	DY-11A	MDF-73	Y-22-1	222D1	DF605	V-9
B	Vert. (36MGII)							
T5	Width Coil (2.5-11MH)	5464	WC-8	MWC-8 ①	WC-12 ②	212R1		WC-18L

① Enlarge mounting hole.
② Connect to corded blue and red terminals.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

	ORIGINAL TERMINAL CONNECTIONS	Stancor Replacement Connections	Merit Replacement Connections	Triad Replacement Connections	RCA Replacement Connections	Halldorson Replacement Connections	Thordarson Replacement Connections
	9	7	9	9	9	9	
	8	4	8	7 & 8	8	8	
	7	7	7	7 & 8	7	7	
	5	See Note ③	5	4	5	5	
	4	3	4	7	4	4	
	3	1	3	3	3	3	
	1	3	1	1	1	1	
Connect Width Coil Across	3 & 1	WC-5 Orange & black term. 1 & 3	3 & 1	3 & 1	3 & 1	3 & 1	
Special Notes		③					

③ Connect red and blue terminals of WC-5 between C115 (original terminal #5 connection) and chassis ground.
If AGC does not function properly, reverse these connections.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI	IMPEDANCE SEC	HOFFMAN PART No	Stancor PART No	Merit PART No	Triad PART No	Halldorson PART No	Thordarson PART No	NOTES
T6	2.7KΩ	3.4Ω	5170						* Used in chassis 401-21
	Pri #2	9.8Ω	5192 *						
	2.7KΩ	1.7Ω							

SPEAKER

ITEM No.	RATINGS SIZE	RATINGS FIELD	RATINGS V. C. IMP.	HOFFMAN PART No	JENSEN PART No	QUAM PART No	NOTES
SP1	5 1/4"	PM	3.4Ω	9091	52524	52A1	1 12" PM speaker used in chassis 401-21 as alternate
SP2	7 x 10	PM	3.4Ω	9099	1021	10A31	
				9074 †	1221	12A31	

COILS (RF-IF)

ITEM No.	USE	DC RES PRI	DC RES SEC.	HOFFMAN PART No	MEISSNER PART No	MERIT PART No	MILLER PART No	NOTES
L1	Diplexer Coil	0Ω						
L2	UHF Ant. Coil	0Ω						
L3	UHF Ant Coil	0Ω						
L4	UHF RF, Mixer & Osc. Coils	0Ω						
L5	RF Choke	0Ω						
L6A	Fil. Choke	0Ω						
B	Fil. Choke	0Ω						
L7	Cathode Choke	0Ω						
L8	UHF IF Input Coil	.1Ω	.3Ω					
L9	UHF IF Interstage Coil	.3Ω	0Ω					
L10	UHF IF InterstageCoil	.3Ω						
L11	Diplexer Coil	0Ω						
L12	Diplexer Coil	0Ω						
L13	VHF Ant. Coils	0OCT	0Ω					
L14	Neutr. Coil	0Ω						
L15	VHF RF, Mixer Grid & Osc. Coils	0Ω						
L16	Fil. Choke	0Ω						
L17	Conv. Plate	.1Ω						
L18	1st Video IF	.1Ω		5539	17-4531 ±		6231 ±	
L19	2nd Video IF	.1Ω	.1Ω	5538	17-4531 ±		6233 ±	
L20	4.25MC Trap	.1Ω		5440	20-1047			
L21	3rd Video IF	.1Ω	.1Ω	5537	17-4531 ±		6232 ±	
L22	41.25MC Trap	0Ω		5438				
L23	4th Video IF	.3Ω	.1Ω	5536	17-4531 ±		*6234	
L24	41.25MC Trap	0Ω		5438				
L25	5th Video IF	.1Ω	.1Ω	5537	17-4531 ±		6232 ±	
L26	39.75 MC Trap	.1Ω		5440				
L27	Series Peak. Coil	9Ω		5433	10-3190 †	TV-484 †	4044 †	150 Microhenries; wound on 39KΩ resistor

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (cont)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA HOFFMAN PART No.	REPLACEMENT DATA MEISSNER PART No.	REPLACEMENT DATA MERIT PART No.	REPLACEMENT DATA MILLER PART No.	NOTES
L28	Shunt Peaking Coil	30Ω		5434			4652	970 Microhenries; some models may use a 39KΩ shunt resistor
L29	Series Peaking Coil	10Ω		5433	19-3160 †	TV-184 †	4644 †	150 Microhenries; wound on 39KΩ resistor
L30	4.5MC Trap	1.9Ω		5402	20-1004	TV-151	1470	
L31	Shunt Peaking Coil	16Ω		5340	19-3300 *		4648 *	350 Microhenries; wound on 10Meg Ω resistor
L32	1st Sound IF	8Ω		5430	17-3402	TV-151 ■	1470	
L33	2nd Sound IF	2.9Ω		5437	17-3400	TV-151	1469	
L34	Ratio Det.	3.7Ω	.6ΩCT	5443	17-1033	TV-110	1468	Tertiary winding=.5Ω
L35	Horiz. Osc.	50Ω		5447	19-1576	TV-163	6210	
L36	RF Choke	0Ω		5266	19-1003		4608	

† Parallel with 39KΩ resistor.
* Parallel with 10 Meg Ω resistor.
■ Disconnect capacitor in parallel.
▲ Use one winding only.
▲ Use one winding only, detune trap and drill mounting holes.
♦ Detune trap and drill mounting holes.
Detune trap

FUSES

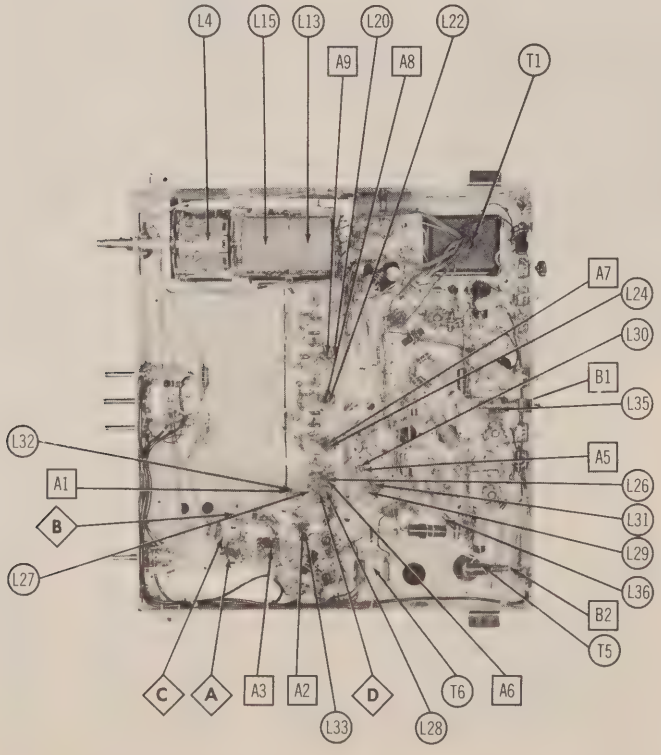
ITEM No.	TYPE	RATING	REPLACEMENT DATA HOFFMAN PART No. FUSE	HOFFMAN PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	3AG S/B	1/4A 250V	9782		313.250 (3AGS/B-1/4)	357001	MDL 1/4	4405

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA HOFFMAN PART No.	REPLACEMENT DATA SYLVANIA PART No.	REPLACEMENT DATA FEDERAL PART No.	NOTES
M2	1N82		1N82 or A		UHF Mixer

MISCELLANEOUS

ITEM No.	PART NAME	HOFFMAN PART No.	NOTES
M3	Dial light	9595	# 44 bayonet
M4	Tuner	9786 or 9795	VHF/UHF all wave 40MC VHF only
M5	Trap		VHF antenna (41MF)
M6	Focus magnet	9789	Includes centering device
M7	Ion trap	9702	45 gauss



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR & ALIGN. IDENTIFICATION

TROUBLE SHOOTING AIDS (cont)

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

POWER

DEAD SET

If filaments fail to light, check AC interlock assembly, switch on volume control and T1. If filaments light substitute V25 and V26. Check B+ filter and decoupling network.

SMALL AND/OR DIM PICTURE

Check by substitution V25 and V26. Check B+ filter and decoupling network.

HIGH VOLTAGE

LOSS OF HIGH VOLTAGE

Check by substitution V21, V22, V23 and V24. Check M1 fuse. Check waveform W16 .

If Satisfactory	If Unsatisfactory
Check C113, C114, C111, C118, T2, T4A, R125 and other associated components.	Check C109, C110, C103, L35, R115, R120, R118 and other associated components.

INSUFFICIENT HIGH VOLTAGE

Check by substitution V22, V23, V25 and V26. Check R10. Proceed as follows under "Loss of High Voltage".

BLOOMING

Check by substitution V22, V23, V24, V25 and V26. Check R125 and other associated components.

GENERAL

RASTER, SOUND, NO PICTURE

Follow procedure outlined under "Loss of Video". '

RASTER, PICTURE, NO SOUND

Follow procedure outlined under "Weak or No Sound".

RASTER, NO SOUND, NO PICTURE

Check by substitution V2, V3, V4, V5, V6, V7, V8 and V9. Check video IF components .

NO RASTER, NO SOUND

Follow procedure outlined under "Dead Set".

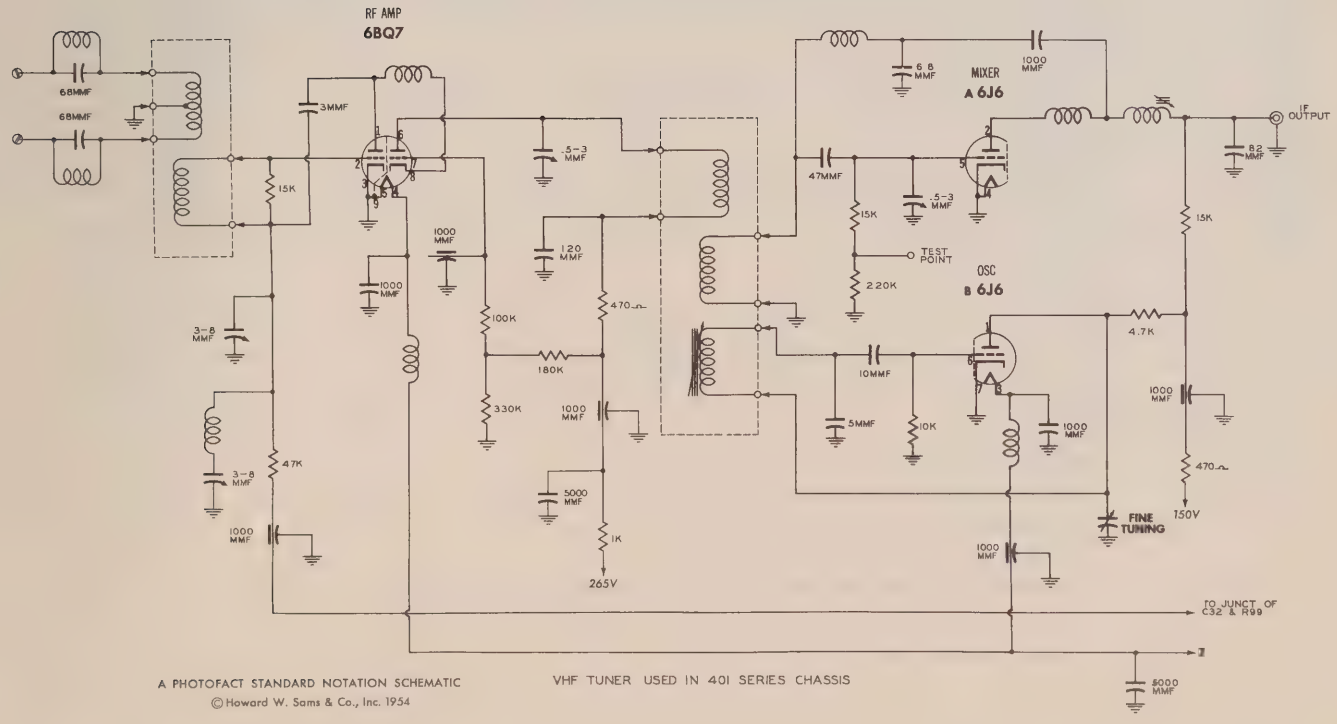
KEYSTONE EFFECT

Check T4, R109, R110, R111 and C119.

INTERMITTENT STREAKS

Check high voltage section for corona discharge and arcing.

Symptoms shown are assumed and are not indicative of the quality and workmanship of this equipment.



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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VHF TUNER USED IN 401 SERIES CHASSIS

ALTERNATE TUNER SCHEMATIC

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustment of the VHF tuner oscillator circuit may be accomplished as follows:

1. Set the selector knob to VHF position.
2. Tune in a TV station and set the fine tuning control to the center of its range.
3. Remove the channel selector and fine tuning knobs.
4. Adjustments are accessible one at a time, then the small hole above and slightly to the left of the channel switch shaft.

To adjust the UHF oscillator, set the channel selector knobs to the desired UHF channel. The fine tuning knob should be at the center of its range. Remove knobs and adjust the oscillator slug, thru the same hole as for VHF adjustments.

If two UHF channels are received and use the same UHF coil strips, the oscillator should be set for the channel closest to the center of the group.

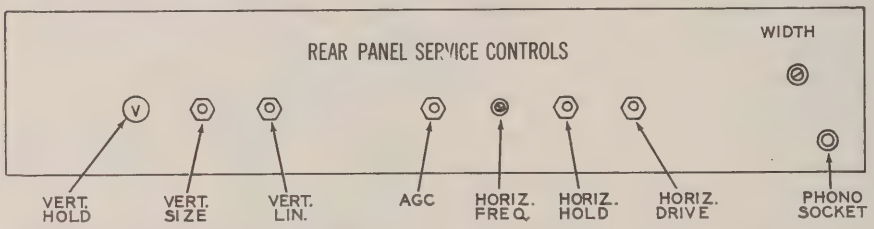
PICTURE TUBE SAFETY GLASS CLEANING

To clean safety glass, remove 3 wood screws holding wood molding from top of cabinet. Remove molding and safety glass. (Use extreme caution when removing safety glass.)

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions).

SERVICE ADJUSTMENT LOCATION



HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Adjustment of the horizontal oscillator circuit can be made from the rear panel of the chassis. Set the horizontal hold control at the mid-position of its range and adjust the horizontal frequency slug (L35) until the picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, adjust the ratio detector secondary (L34) located on top of chassis. (See tube placement chart).

FUSES

One fuse is used for horizontal sweep circuit protection. (For location see tube placement chart).

CENTERING

Centering is accomplished mechanically by means of a centering lever on the PM focusing assembly. Adjust the centering lever from side to side, and up and down until the picture is properly centered.

DISASSEMBLY INSTRUCTIONS

1. Remove 8 push-on type knobs from front panel.
2. Remove 7 wood screws and 1 metal screw. Remove back cover.
3. Disconnect built-in antenna (if used).
4. Disconnect speaker plug on rear apron of chassis.
5. Remove 4 chassis bolts and 2 wood screws from rear mounting brackets. Remove chassis.

NOTE: The 2 speakers may be removed by removing 8 wood screws. Remove 1 screw from crossover coil. Remove speakers and coil.

CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

MAGNAVOX
MODELS AMP-131A, B

MAGNAVOX
MODELS AMP-131A, B

PROPERTY OF
L. F. DUNKENSHIP
3614 MEADE ST.
DENVER, COLORADO

MAGNAVOX
MODELS AMP-131A, B

TRADE NAME	Magnavox Chassis Amp. -131A, B
MANUFACTURER	Magnavox Co., 2131 Bueter Rd., Fort Wayne, Ind.
TYPE SET	AC Operated 6 watt Audio Amplifier with 3 Speed Automatic Record Changer
TUBES (Four)	Types 12AX7 AF Amp-Phase Inv., (2) 6V6GT Audio Output, 6X5GT Rectifier
POWER SUPPLY	110-120 Volts AC-50/60 Cycles RATING .37 Amp. @ 117 Volts AC

RECORD CHANGER UNIT - MAGNAVOX MODEL 521736

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: MAGNAVOX PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	AF Amplifier Phase Inverter	12AX7	12AX7	9A	
V2	Output	6V6GT	6V6GT	7S	
V3	Output	6V6GT	6V6GT	7S	
V4	Rectifier	6X5GT	6X5GT	6S	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MAGNAVOX PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	▲ 40	350	270021-43	AFH 4-93		C029		FP428.4	TVL-4720	
B	■ 35	350				BR4035				
C	▲ 30	350								
D	30	350								
C2	20	25	270027-2	PRS25/20		BR202		TC26	TVA-1205	
C3	10000		250175-2	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C4	22	500	250187-45			5W5Q22				
C5	.047	600	2501201-11	P688-047	DF-503	CUB6S47		PT6147	6TM-S47	
C6	.047	600	2501201-11	P688-047	DF-503	CUB6S47		PT6147	6TM-S47	
C7	220	500	250159-86			5W5T22				Note 1
C8	.01	600	250201-7	P688-01	D6-103	CUB6S1	GP2-333-103	PT611	6TM-S1	Note 2
C9	.1	200	250202-13	P288-1	DF-104	PJ2P1		PT401	2TM-P1	Note 3
C10	.0068	600		P688-0068	D6-682	CUB6D68	GP2-333-682	PT6268	6TM-D68	Note 4
C11	.1	200	250202-13	P288-1	DF-104	PJ2P1		PT401	2TM-P1	
C12	10000	1000	250219-2	1089ZX-01		CUB16S1		PT1011	MB-S1	
C13	10000	1000	250219-2	1089ZX-01		CUB16S1		PT1011	MB-S1	

Note 1. Chassis 131A uses a 470MMF in this application.
Note 2. Chassis 131A uses a 1500MMF in this application.
Note 3. Chassis 131A uses a .22MF in this application.
Note 4. Not used in chassis 131A.

CONTROLS

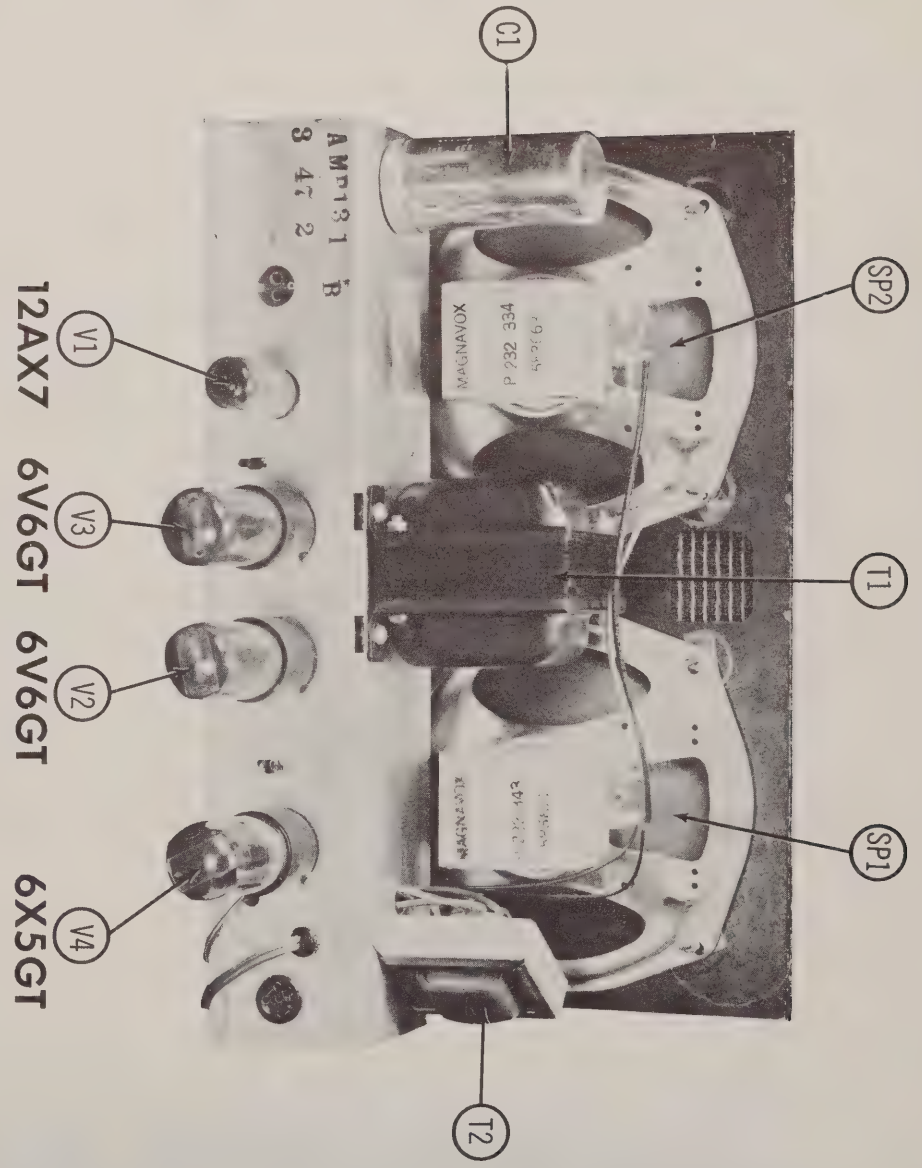
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MAGNAVOX PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	5000Ω	½	D220072-23	Q17-114		AB-12	U-14	Treble-Note
B	Shaft		Not Req.	Not Req.		AK-3	Not Req.	Attach to R1A
R2	3 Meg	½	D220072-22	Q17-140				Gain

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: MAGNAVOX PART No.	IRC PART No.	NOTES
R3	820KΩ	½	230104-97	BTS-820K	
R4	1000Ω	½	230104-62	BTS-1000	
R5	470KΩ	½	230104-94	BTS-470K	
R6	3300Ω	½	230104-68	BTS-3300	
R7	22KΩ	½	230104-78	BTS-22K	
R8	5600Ω	½	230104-71	BTS-5600	
R9	470KΩ	½	230104-94	BTS-470K	
R10	470KΩ	½	230104-94	BTS-470K	
R11	470Ω	1	230105-58	BTA-470	
R12	470Ω	1	230105-58	BTA-470	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: MAGNAVOX PART No.	IRC PART No.	NOTES
R13	15KΩ	1	230105-76	BTA-15K	
R14	470KΩ	½	230104-94	BTS-470K	
R15	100Ω	½	230104-50	BTS-100	
R16	100Ω	½	230104-50	BTS-100	
R17	5600Ω	½	230104-71	BTS-5600	
R18	10KΩ	½	230104-74	BTS-10K	
R19	10KΩ	½	230104-74	BTS-10K	
R20	400Ω	4	240021-42	1 3/4A-400	
R21	68KΩ	½	230104-84	BTS-68K	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	MAGNAVOX PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.
T1	117VAC @ .37A	520VCT .070ADC	6.3VAC @ 1.8A		300073-1	PC-8404①, ②	P-3148 ①	R-10A ①②	P9206①②	T-26R31U①

① Drill new mounting holes.
② Tape 5V and 6.3V CT leads.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	MAGNAVOX PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	
T2	10KΩCT	1.6Ω	330037-1	A-3852	A-2936	S-15X	Z1404	24S61	

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	MAGNAVOX PART No.	JENSEN PART No.	QUAM PART No.	
SP1	6"	PM	3.3Ω	P232343	ST-108 Mod P6-X	6A1	Speakers are connected in parallel.
SP2	6"	PM	3.3Ω	P232343	ST-108 Mod P6-X	6A1	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA						REMARKS
	MAGNAVOX PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.	
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE / NEEDLE	
M1						43 / O-2 S-2	

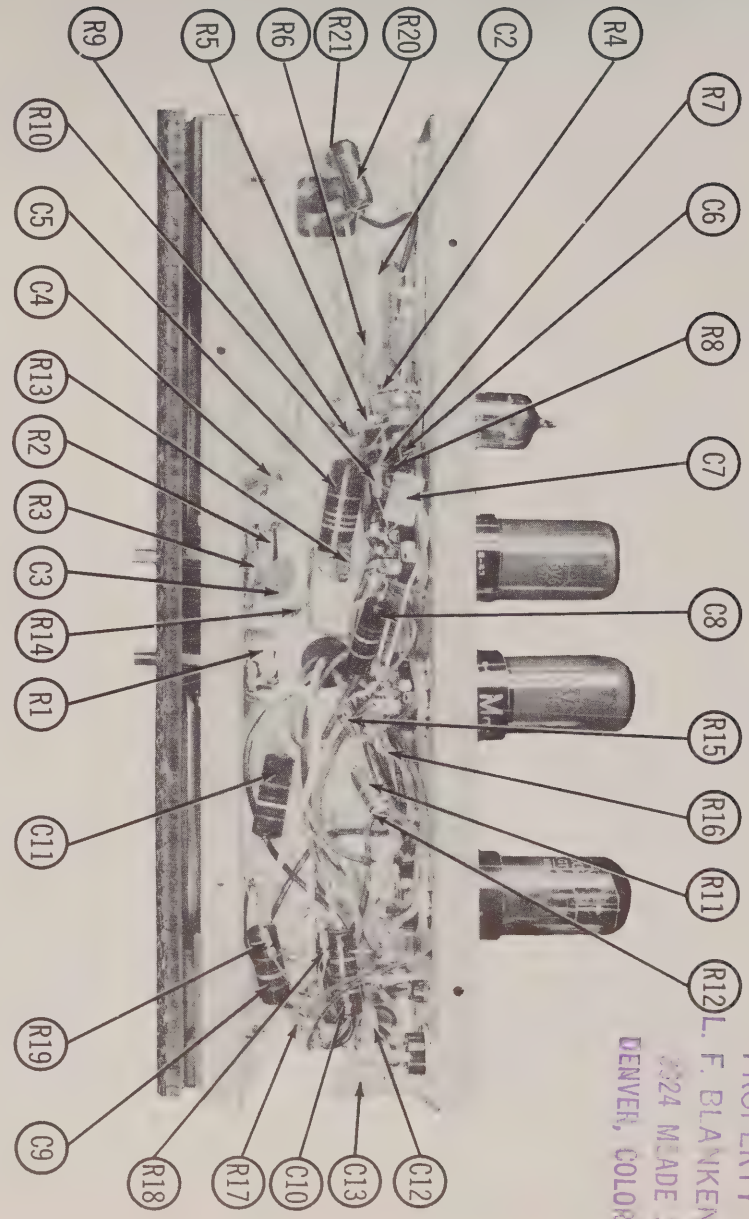
ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGE LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENT SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

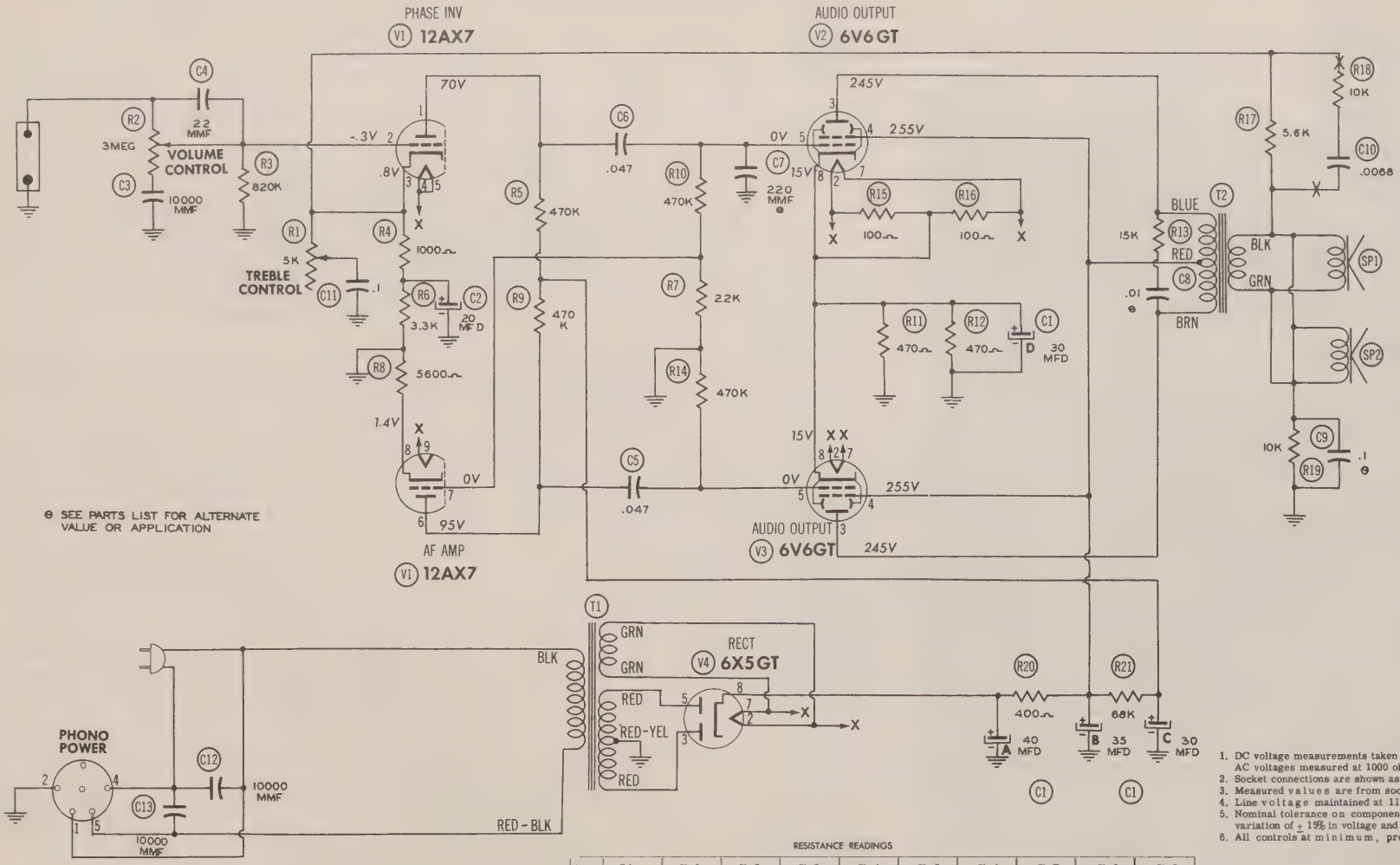
ITEM No.	REPLACEMENT DATA				REMARKS
	MAGNAVOX PART No.	JENSEN PART No.	PERMO PART No.	WALCO PART No.	
M2		† S-66	† AC-434 •† AC-434D1 †♦ AC-434D2 ♦ AC-434D	†W-75TPS	† Jewel ♦ Diamond

CHASSIS—BOTTOM VIEW



PROPERTY OF
L. F. BLANKENSHIP
2324 MLADE ST.
DENVER, COLORADO

MAGNAVOX
CHASSIS AMP. - 131A



THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12AX7	† 540KΩ	820KΩ	2. 7KΩ	285Ω	285Ω	† 540KΩ	22KΩ	5. 6KΩ	285Ω
V 2	6V6GT	INF	285Ω	† 650Ω	† 400Ω	490KΩ	† 15KΩ	285Ω	235Ω	
V 3	6V6GT	INF	285Ω	†650Ω	† 400Ω	470KΩ	INF	285Ω	235Ω	
V 4	6S5GT	INF	285Ω	220Ω	INF	220Ω	INF	285Ω	200KΩ	

† MEASURED FROM PIN 8 OF V4.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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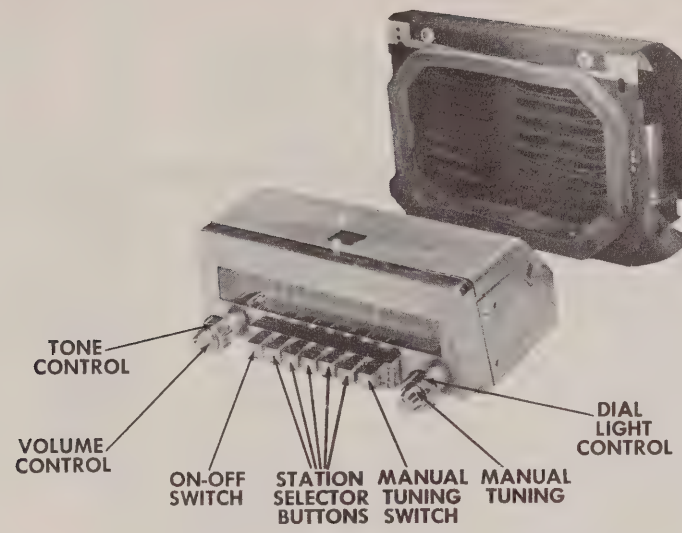
3924 MEADE ST.
DENVER, COLORADO



MOPAR
MODEL 830

TRADE NAME	Mopar Model 830 (For 1954 Chrysler Auto Models C62, C63, C64)
MANUFACTURER	Philco Corp., Tioga & "C" Sts., Philadelphia, Pa.
TYPE SET	Battery Operated Custom Built AM Superheterodyne Automobile Receiver
TUBES (Eight)	Types 6BA6 RF Amp., 6BE6 Conv., 6BA6 IF Amp., 6AV6 Det.-AVC-AF Amp., 6C4 Phase Inv., (2) 6AQ5 Audio Output, 6X4 Rectifier
POWER SUPPLY	6 Volt Storage Battery — RATING 6.9 Amp. @ 6.3 Volts DC
TUNING RANGE—BROADCAST	535-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Set the tuning cores to the low frequency end stop and set dial pointer to the last index mark to the left of "54" on the dial. Volume control should be at maximum position . Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05MFD	High side to pin 7 (grid) of 6BE6 (V2). Low side to chassis.	455KC (400%Mod)	540KC (Depress manual push button at extreme right)	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.	50MMF	High side thru 50MMF to antenna receptacle. Low side to chassis. Connect another 50MMF capacitor from antenna receptacle to chassis.	455KC (400%Mod)	Depress any station selector push button	"	A5	Adjust for MINIMUM output.
3.	"	"	1600KC	1600KC (Depress manual push button)	"	A6	Replace chassis housing. Adjust for maximum output.
4.	"	"	1400KC	Tune to 1400KC signal	"	A7, A8	"
5.	"	"	600KC	600KC	"	A9	Adjust for maximum output while rocking tuning control thru 600KC signal. Repeat steps 3 and 5, then repeat steps 3 and 4. If considerable change is noted repeat steps 5, 3 and 4 in that order.
6.	50MMF	High side thru 50MMF to antenna receptacle. Low side to chassis. Connect another 50MMF capacitor from antenna receptacle to chassis.	1200KC (400%Mod)	Depress 2nd. push button from extreme right (See remarks)	Across voice coil	A10	Remove push button cap and tune push button core to 1200KC. Adjust A10 for maximum output.
7.	With radio installed in car and antenna fully extended depress manual push button (on extreme right) and tune in a weak station near 1400KC and adjust A8 for maximum volume.						
8.	Depress second push button from extreme right and tune in a station at (or near) 1200KC and adjust A10 for maximum volume.						

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		PHILCO PART No.	STANDARD REPLACEMENT		
V1	RF Amplifier	6BA6	6BA6	7BK	
V2	Converter	6BE6	6BE6	7CH	
V3	IF Amplifier	6BA6	6BA6	7BK	
V4	Det.-AVC-AF Amp	6AV6	6AV6	7BT	
V5	Phase Inverter	6C4	6C4	6BG	
V6	Audio Output	6AQ5	6AQ5	7BZ	
V7	Audio Output	6AQ5	6AQ5	7BZ	
V8	Rectifier	6X4	6X4	5BS	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	PHILCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	■20	350		AFH3-106		C078		FP330.7	TVL-3634	
B	▲10	350								
C	20	25								
C2	.047	200		P288-047	DF-503	PJ2S47		PT4147	2TM-S47	
C3	56	500		1468-00005		5W5Q56			MS-46	
C4	39	500		1468-00004		5W5Q39		MCB223	MS-44	
C5	10	500		1468-00001		5W5Q1		MCB215	MS-41	
C6	.047	400		P488-047	DF-503	CUB4S47		PT4147	4TM-S47	
C7	.047	200		P288-047	DF-503	PJ2S47		PT4147	2TM-S47	
C8	65			SI65N750						
C9	.0047	400		P488-0047	D6-472	CUB4D47	GP2-333-472	PT4247	4TM-D47	
C10	100	500		1468-0001		5W5T1		MCB235	MS-31	
C11	.01	400		P488-01	D6-103	CUB4S1	GP2-333-103	PT411	4TM-S1	
C12	.1	200		P288-1	DF-104	PJ2P1		PT401	2TM-P1	
C13	.25	100		P288-25		PJ2P25		PT4025	2TM-P25	
C14	.0047	200		P688-0047	D6-472	CUB6D47		PT6247	6TM-D47	
C15	.01	400		P488-01	D6-103	CUB6S1	GP2-333-103	PT611	6TM-S1	
C16	.01	400		P488-01	D6-103	CUB6S1	GP2-333-103	PT611	6TM-S1	
C17	.0068	1000		P1688-0068		CUB16D68		PT10268	MB-D68	
C18	.5	100		VHC-36		MP-2P5		RF-480	2TM-P5	
C19	.5	100		VHC-36		MP-2P5		RF-480	2TM-P5	
C20	330			SI330	D6-331	TP43	GP2K-331	UC-5333	5GA-T33	
C21	.0068	1600		BCD-23		CUB16D8				

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESIST-ANCE	WATTS	PHILCO PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	4Meg	½	33-5557-13	*QJ-433A			UF106L	Tone-Panel-Note
B	350KΩ	½					UR354A	Volume-rear
R2	15Ω	1	33-5568-5					Dimmer

* CONCENTRIKIT EQUIVALENT KIT K-2 BASE ELEMENTS & SHAFTS B12-141 & P1-229 (Panel)
B18-132X & R1-308 (Rear)

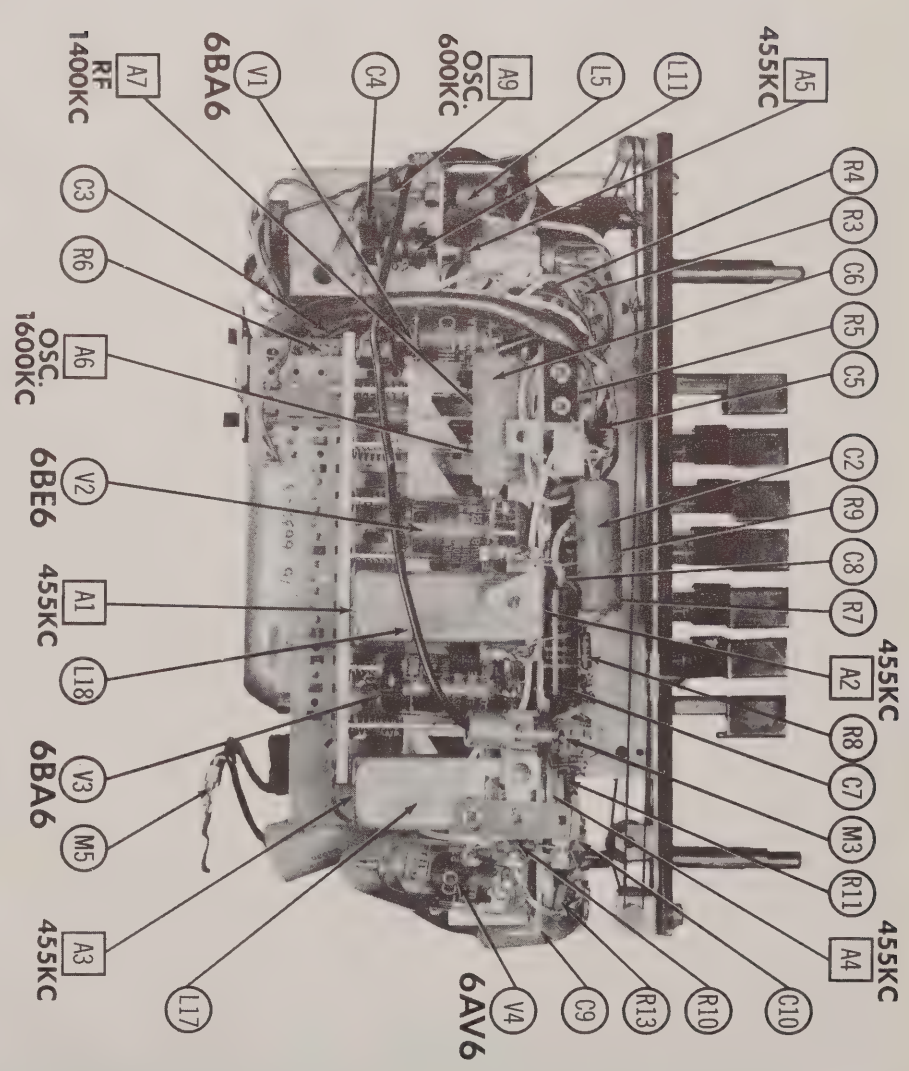
Note . Tone control has split resistor element 2 meg each end to center.

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	PHILCO PART No.	IRC PART No.	
R3	120Ω	½		BTS-120	
R4	330Ω	½		BTS-330	
R5	10KΩ	½		BTS-10K	
R6	68KΩ	½		BTS-68K	
R7	22KΩ	½		BTS-22K	
R8	330Ω	½		BTS-330	
R9	27KΩ	1		BTA-27K	
R10	1Meg	½		BTS-1Meg	
R11	22KΩ	½		BTS-22K	
R12	180Ω	½		BTS-180	
R13	15Meg	½		BTS-15Meg	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	PHILCO PART No.	IRC PART No.	
R14	220KΩ	½		BTS-220K	
R15	15Meg	½		BTS-15Meg	
R16	220KΩ	½		BTS-220K	
R17	220KΩ	½		BTS-220K	
R18	470KΩ	½		BTS-470K	
R19	330Ω	1		BTA-330	
R20	470KΩ	½		BTS-470K	
R21	2200Ω	½		BTS-2200	
R22	1000Ω	1		BTA-1000	
R23	100Ω	1		BTA-100	
R24	100Ω	1		BTA-100	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (VIBRATOR)

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	PHILCO PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.
T1	6.3VCT @3.8A	446VCT .056ADC			32-8313-2					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	PHILCO PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	
T2	8.6KΩ	3.2Ω	32-8316-7		A-2938①				① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	PHILCO PART No.	JENSEN PART No.	QUAM PART No.	
SP1	6 x 9"	PM	3.2Ω	36-1631-2 36-1632-2 ①	ST-810 Mod. P69-V	69A2	① Alternate speaker

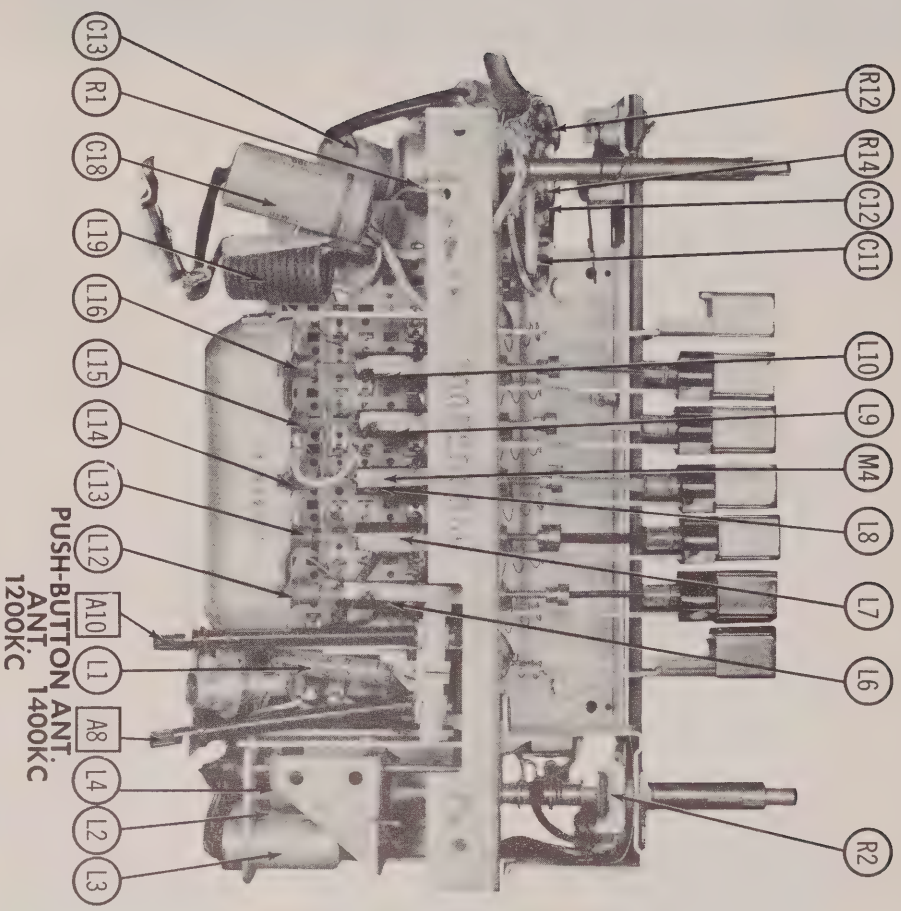
COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	PHILCO PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Ant. Coupling	4Ω			19-1004		4610	5.6 Microhenries, IRC part #CL-1
L2	Ant. Coil	13Ω						Manual tuning
L3	RF Coil	15Ω						Manual tuning
L4	Osc. Coil	1.8Ω						Manual tuning
L5	Osc. Coil	1.8Ω						Tapped @.7Ω
L6	Ant. Coil	12Ω						Push button tuning
L7	Ant. Coil	10.5Ω						Push button tuning
L8	Ant. Coil	9Ω						Push button tuning
L9	Ant. Coil	8.5Ω						Push button tuning
L10	Ant. Coil	15Ω						Push button tuning
L11A	RF Coupling	18Ω						Push button tuning
B	IF Trap	30Ω						
L12	Osc. Coil	4.2Ω						Push button tuning
L13	Osc. Coil	3Ω						Push button tuning
L14	Osc. Coil	2.6Ω						Push button tuning
L15	Osc. Coil	1.7Ω						Push button tuning
L16	Osc. Coil	1.6Ω						Push button tuning
L17	Input IF	12Ω	12Ω	32-4160	16-6758	BC-352	12-C1	
L18	Output IF	15Ω	15Ω	32-4240	16-6770	BC-355	12-C6	
L19	Fil. Choke	0Ω						
L20	Vibrator Hash Choke	0Ω				BC-537	5221	1 Microhenry

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA				NOTES
				PHILCO PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	RADIART PART No.	
M1	Interrupter	6.3V	115∿	83-0035A	5326	859	5342	

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			PHILCO PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	SFE	14A	45-2559	76-4674-7	307014 (SFE-14A)	155014	SFE14	HDI

MISCELLANEOUS

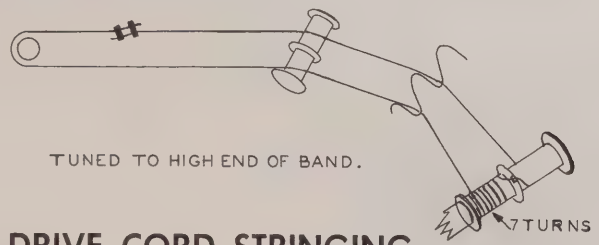
ITEM No.	PART NAME	PHILCO PART No.	NOTES
M3	Dial Light	34-2064	#44 Bayonet (2uused)
M4	Switch		Push button assembly
M5	Spark plate	30-1235-2	
A8, A10	Trimmer Cap.	31-6502-2	2 used (antenna trimmers)
	Trimmer Cap.		Dual (includes fixed trimmer & osc. coupling cap.)
	Push button	77-0915-8	Core and key
	Knob	27-4687-21	Volume and tuning
	Knob	28-9742FA8	Tone and light
	Dial Glass	54-9118	

PUSH BUTTON ADJUSTMENT

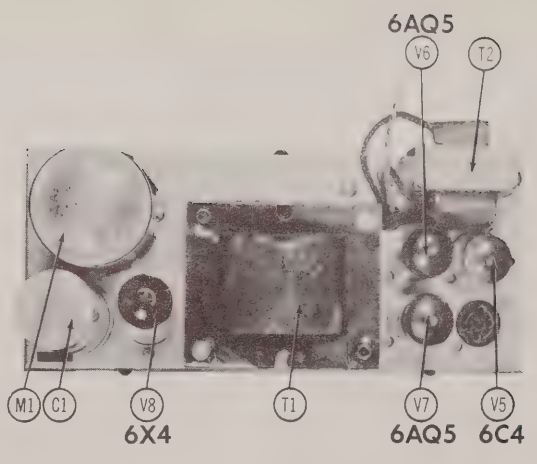
Push button tuning ranges:

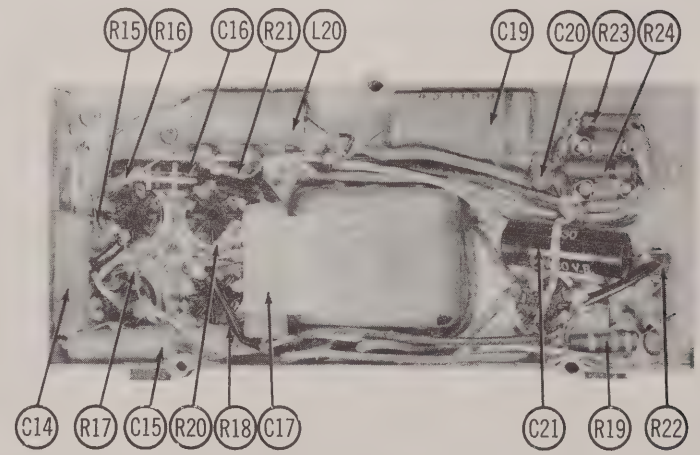
Push button #2 (second button from extreme left) ...535-1020KC
Push button #3 ..... 610-1200KC
Push button #4 .....700-1410KC
Push button #5 .....740-1500KC
Push button #6 ..... 840-1600KC

Remove tuning button caps and select a station within the range of each push button.
Press push button #7 in and tune manually to a station between 840 and 1600KC. Press in push button #5 and pull out knurled end of button and turn it to right or left until desired station is tuned in. Press knurled button in and replace push button cap.
Repeat procedure for remaining push buttons.
NOTE: Final push button tuning should be made with radio installed in car and antenna fully extended.
See step 8 for final push button compensator adjustment (A10).



DRIVE CORD STRINGING





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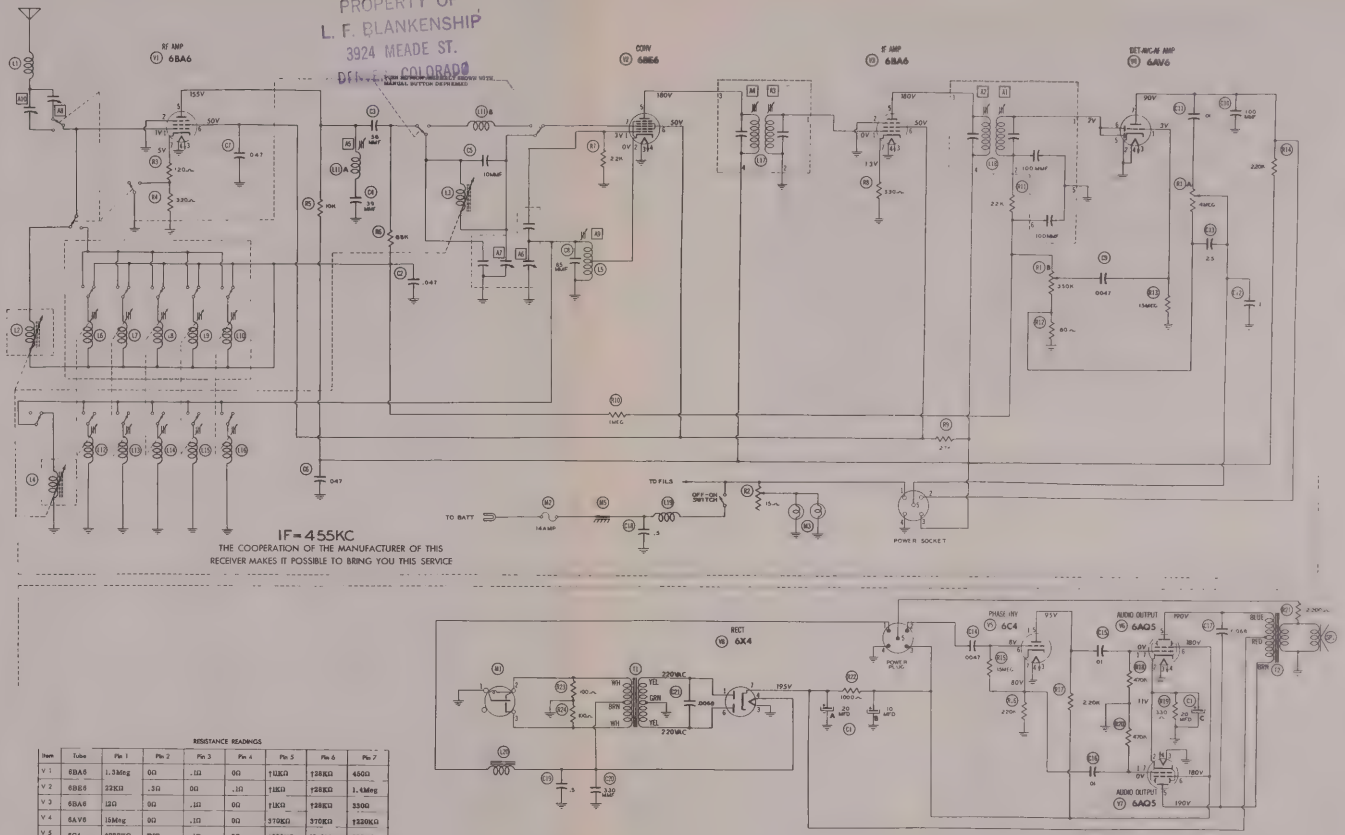

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	6BA6	1.3Meg	0Ω	.1Ω	0Ω	†1ΩKΩ	†28KΩ	450Ω
V 2	6BE6	22KΩ	.3Ω	0Ω	.1Ω	†1KΩ	†28KΩ	1.4Meg
V 3	6BA6	1Ω	0Ω	.1Ω	0Ω	†1KΩ	†28KΩ	330Ω
V 4	6AV6	1Meg	0Ω	.1Ω	0Ω	370KΩ	370KΩ	†320KΩ
V 5	6C4	†220KΩ	INF	.1Ω	0Ω	†220KΩ	15.2Meg	220KΩ
V 6	6AQ5	470KΩ	330Ω	0Ω	.1Ω	†220Ω	†1KΩ	470KΩ
V 7	6AQ5	470KΩ	330Ω	0Ω	.1Ω	†220Ω	†1KΩ	470KΩ
V 8	6X4	440Ω	0Ω	0Ω	.1Ω	INF	405Ω	300KΩ

† MEASURED FROM PIN 7 OF V8

1 DC voltage measurements taken with vacuum tube voltmeter.
2 AC voltages measured at 1000 ohms per volt.
3 Socket connections are shown as bottom views.
4 Measured resistance are from socket pins to common negative.
5 Values of resistors and capacitors may vary ± 10% from listed.
6 Printed inductance vs components values make possible a variation of ± 10% in voltage and resistance readings.
7 Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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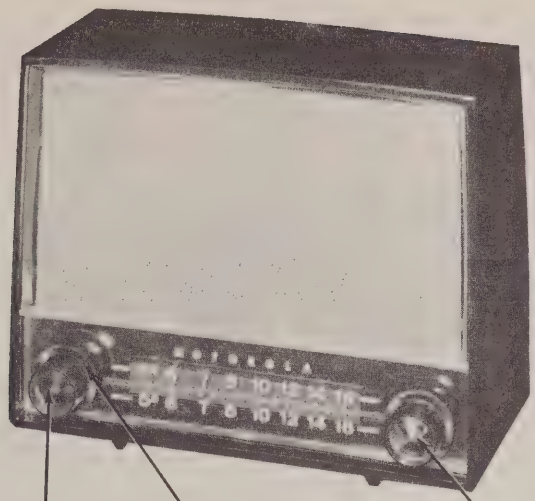
MOTOROLA
MODEL 63X21 (Ch. HS-385)



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MOTOROLA
MODEL 63X21 (Ch. HS-385)

TRADE NAME	Motorola Model 63X21 (Ch. HS-385)
MANUFACTURER	Motorola Inc., 4545 Augusta Blvd., Chicago 51, Ill.
TYPE SET	AC-DC operated 2 band AM Superheterodyne Receiver
TUBES (Six)	Types 12BA6 RF Amp., 12BE6 Conv., 12BA6 IF Amp., 12AT6 Det.-AVC-AF Amp., 35C5 Audio Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-DC
RATING	.24 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	535-1620KC
SHORT WAVE	6-16MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

With tuning gang fully closed, line up left edge of pointer carrier with the right edge of the small hole in the main chassis just behind and slightly above the dial back plate.
Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 12BE6 (V2). Low side to B-.	455KC (400~ Mod)	Broadcast	Tuning gang fully open	Across voice coil	A1, A2 A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	"	High side to pin 1 (grid) of 12BA6 (V1). Low side to B-.	455KC	"	"	"	A5	Adjust for MINIMUM output
3.	"	Loop	1620KC	"	"	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4.		"	1400KC	"	Tune to 1400KC	"	A7	"
5.		"	600KC	"	Tune to 600KC signal	" "	A8	Adjust for maximum output. Check calibration and tracking. If necessary, repeat steps 3, 4 and 5.
6.	400Ω carbon resistor	High side to short wave antenna. terminal. Low side to B-.	16.1MC	SW	Tuning gang fully open	"	A9	Adjust for maximum output.
7.	"	"	15MC	"	Tune to 15MC signal	" "	A10	Adjust for maximum output while rocking tuning gang through 15MC signal. Check for image frequency at 15.91MC.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	RF Amplifier	12BA6	12BA6	7BK	
V2	Converter	12BE6	12BE6	7CH	
V3	IF Amplifier	12BA6	12BA6	7BK	
V4	Det-AVC-AF Amp.	12AT6	12AT6	7BT	
V5	Output	35C5	35C5	7CV	
V6	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	40	150	23B484234	PRS150/50-30-20		BBRT4421E		3N532	TVA-3448	Red
B	20	150								Blue
C	20	150								Orange
C2	05	200	8R9821	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C3	10000		21R482726	BPD-01	DD-103	KD82	811-01	DC-511	5HK-S1	
C4	10000		21R482726	BPD-01	DD-103	KD82	811-01	DC-511	5HK-S1	
C5	10000		21R482726	BPD-01	DD-103	KD82	811-01	DC-511	5HK-S1	
C6	10000		21R482726	BPD-01	DD-103	KD82	811-01	DC-511	5HK-S1	
C7	10000		21R482726	BPD-01	DD-103	KD82	811-01	DC-511	5HK-S1	
C8	33		21R119912							
C9	47		21R114207							
C10	4700	500	21K120927	1464-005		1R5D47		MC465	1FM-25	
C11	400	500	21K120926	1469-0004		5R5T4		MC243	1FM-34	
C12	18		21R120551	SI18NP0	TCZ18	TZ12	NP0K-180			
C13A	220		♦ 21B482847	♦ PA-100	D6-221	TP39	GP1K-221	UC-5322	♦ 34C3	
B	2000				DD-202	TP56	801-002	DC-522		
C	220				D6-221	TP39	GP1K-221	UC-5322		
D	5000				DD-502	TP64	801-005	DC-522		
C14	1000		21R482726	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C15	005	600	8R9813	P688-005	D6-502	CUB6D5	GP2-333-502	PT625	6TM-D5	
C16	02	400	8R9802	P488-02	DF-203	CUB4S2		PT412	4TM-S2	
C17	10000		21R482726	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C18	047	400	BK490232	489ZX-047	DF-503	PJ4S47		PT4147	4TM-S47	
C19	.15	400	8K72686	P488-15		CUB4P15		PT4015	4TM-P15	

♦ Item C13A, C13B, C13C and C13D are combined in one unit.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MOTOROLA PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1 Meg	½	18B630601	* QJ-545R			UF16L	Tone (Panel)
B	1 Meg	½					UR16-T254†	Volume (Rear) Tapped at 250K
C	Switch						US-26	Attach to R1B

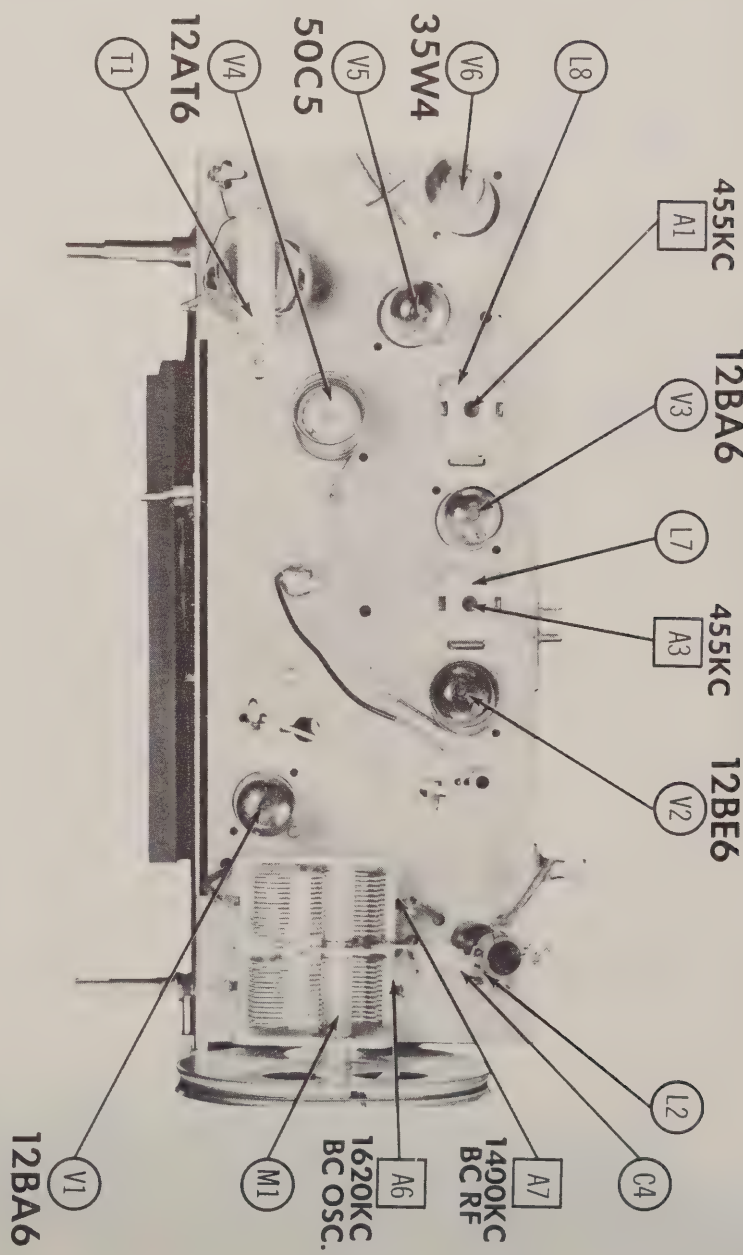
† Universal replacement (Mallory exact duplicate Part No. UE1687S)
* CONCENTRIKIT EQUIVALENT KIT K-2 BASE ELEMENTS & SHAFTS B11-137 & P1-106 (Panel) B13-137X & R1-122 (Rear) & SWITCH 76-1.

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: MOTOROLA PART No.	IRC PART No.	NOTES
R2	100KΩ	½	6R6075	BTS-100K	
R3	100KΩ	½	6R6075	BTS-100K	
R4	220Ω	½	6R3933	BTS-220	
R5	4700Ω	½	6R6039	BTS-4700	
R6	22KΩ	½	6R6397	BTS-22K	
R7	100Ω	½	6R6326	BTS-100	
R8	22KΩ	½	6R6028	BTS-22K	
R9	150Ω	½	6R3992	BTS-150	
R10	1 Meg	½	6R6004	BTS-1 Meg	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: MOTOROLA PART No.	IRC PART No.	NOTES
R11	33KΩ	½	6R6012	BTS-33K	
R12	10 Meg	½	6R2109	BTS-10 Meg	
R13	470KΩ	½	6R6032	BTS-470K	
R15	150Ω	½	6R3992	BTS-150	
R15	470KΩ	½	6R6032	BTS-470K	
R16	1000Ω	1	6R3953	BTA-1000	
R17	100Ω	1	6R488025	BTA-100	
R18	27Ω	½	6R5683	BTS-27	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	MOTOROLA PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	
T1	2.6KΩ	3.3Ω	25C630619	A-3332	A-3025	S-1X ①	Z1101	TS-24S50	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	MOTOROLA PART No.	JENSEN PART No.	QUAM PART No.	
SP1	6X9"	PM	3.3Ω	50D630646			

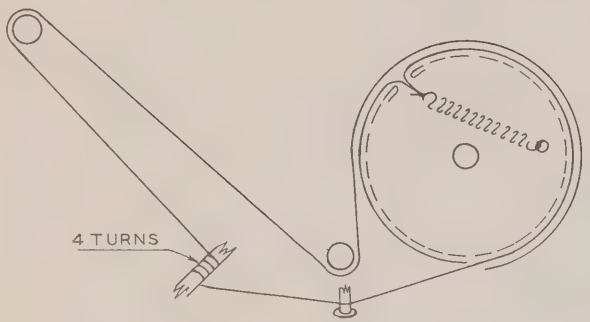
COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	MOTOROLA PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	BC Loop Ant.	2.2Ω		1V630763				Includes panel assembly & line cord
L2	SW Ant. Coil	0Ω	.1Ω	24B630625	14-1044 †		C-5495-A†	
L3	RF Choke	0Ω		24K630897	19-1000	TV-189	4602	1 Microhenries
L4	IF Trap Coil	38Ω		24A630665	19-1994 †	BC-503 †	4666	2.47 Microhenries
L5	BC Osc. Coil	.7Ω	7Ω	24B630623	14-1060		71-Osc.	
L6	SW Osc. Coil	0Ω	0Ω	24B630624			C-5495-C†	
L7	Input IF	18Ω	18Ω	24C485553	16-6758	BC-352	12-C1	
L8	Output IF	18Ω	18Ω	24C485553	16-6758	BC-353	12-C2	

† Drill mounting hole.

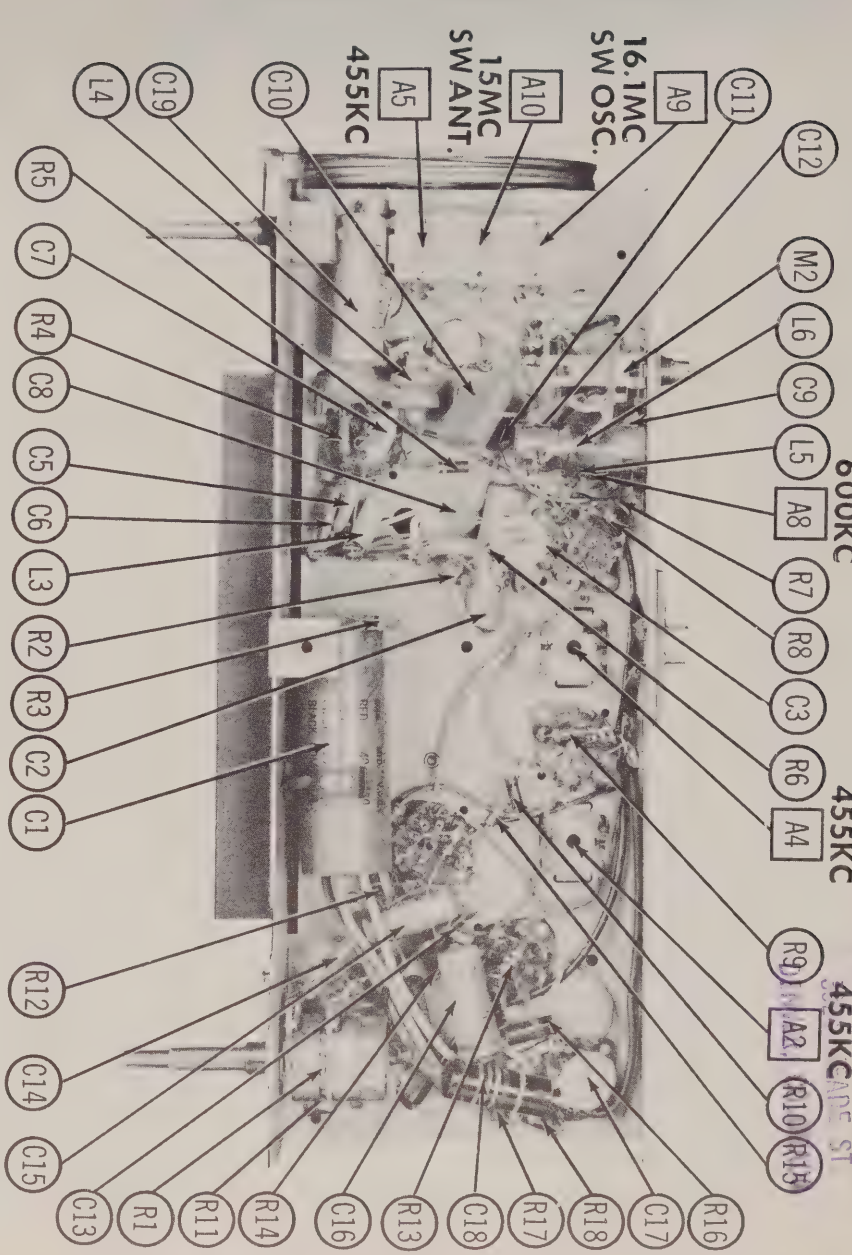
MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M1	Tuning cap	19C630628	(41-430MMF, 18-410MMF)
M2	Switch	40C630627	S. W. -B. C. Selector
	Trimmer cap	20B630626	3 used
	Cabinet	16E630166	
	Knob	36B630634	Tuning
	Knob	36B630637	Volume
	Knob	36B630640	Tone
	Knob	36B630651	Bandswitch
	Dial scale	34K630668	



DIAL CORD STRINGING

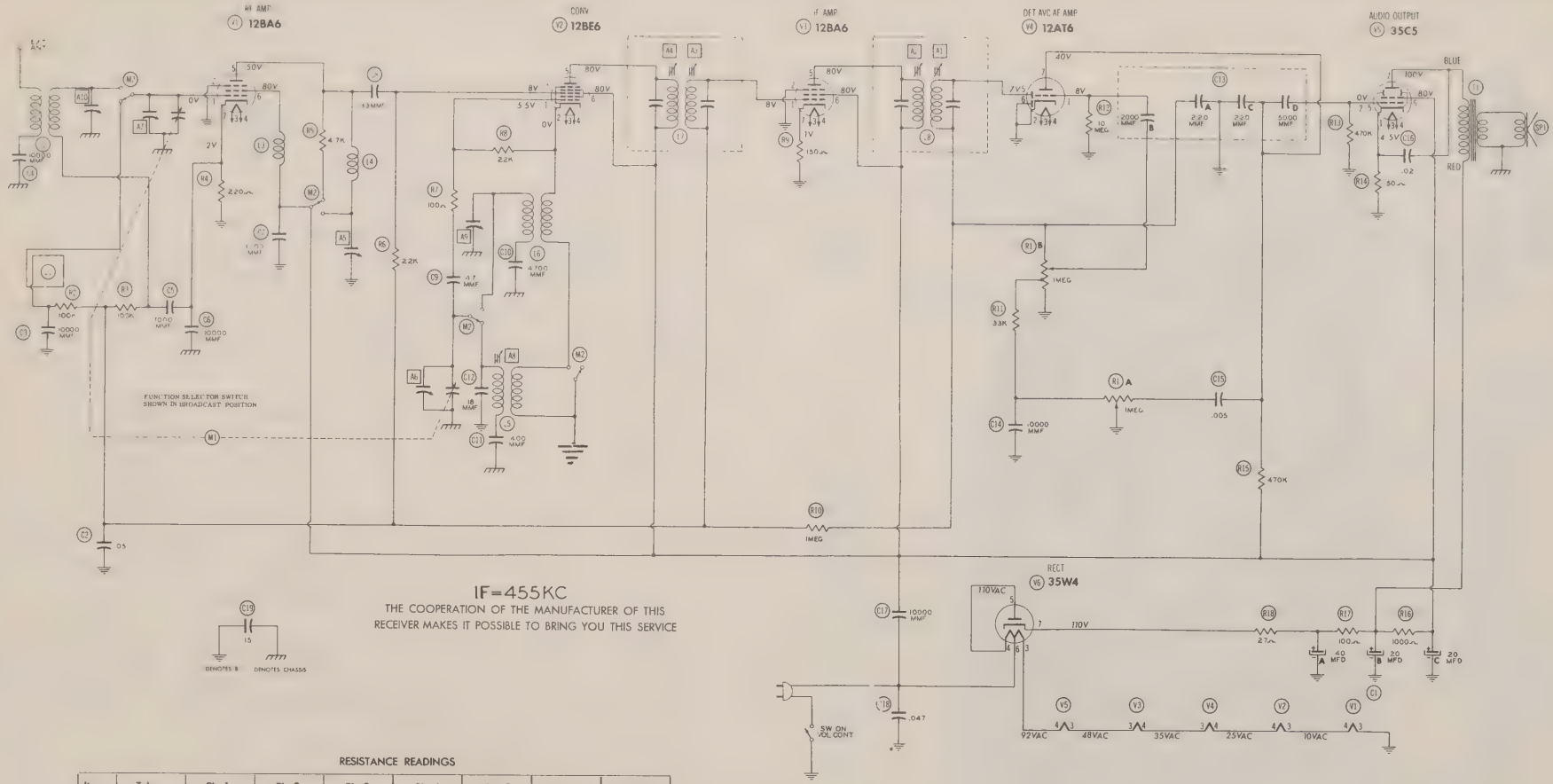
CHASSIS—BOTTOM VIEW



L. N. LANKENSHIP
455KC ARC ST

MOTOROLA MODEL 63X21 (Ch. HS-385)

MOTOROLA MODEL 63X21 (Ch. HS-385)



IF=455KC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

C19 .15 — DENOTES B+ — DENOTES CHASSIS

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BA6	2.1 Meg	0Ω	0Ω	13Ω	† 5.8KΩ	† 1.1KΩ	220Ω
V 2	12BE6	22KΩ	.7Ω	13Ω	25Ω	† 1.1KΩ	† 1.1KΩ	2 Meg
V 3	12BA6	2 Meg	0Ω	50Ω	38Ω	† 1.1KΩ	† 1.1KΩ	150Ω
V 4	12AT6	10 Meg	0Ω	38Ω	25Ω	1 Meg	0Ω	† 470KΩ
V 5	35C5	150Ω	470KΩ	50Ω	85Ω	470KΩ	† 1.1KΩ	† 227Ω
V 6	35W4	† 127Ω	† 1.1KΩ	85Ω	120Ω	120Ω	115Ω	100KΩ

MEASUREMENTS ARE IN AM POSITION
† MEASURED FROM PIN 7 OF V6

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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RCA VICTOR MODEL 3-HS-6 (Ch. RS-145, RS-145X)

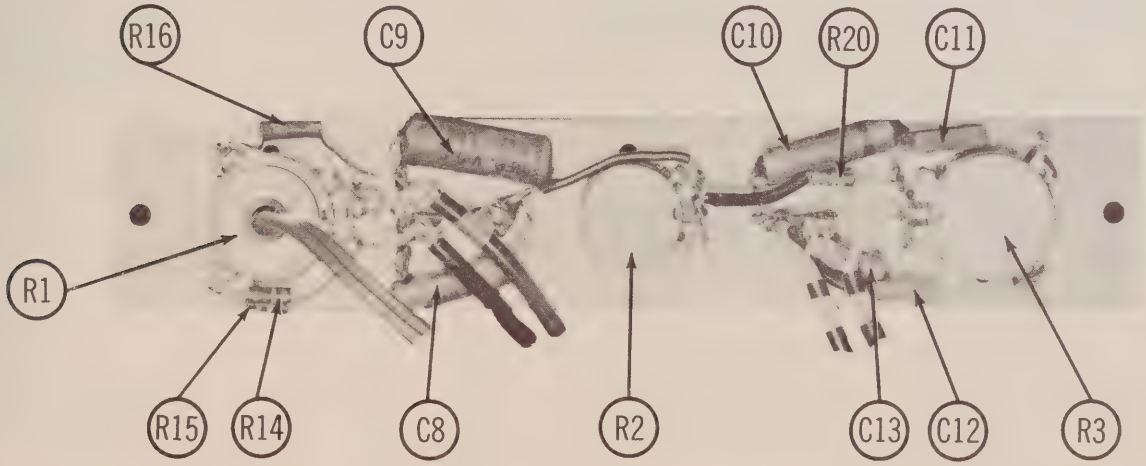
RCA VICTOR MODEL 3-HS-6 (Ch. RS-145, RS-145X)

PROPERTY OF
L. F. [illegible]
[illegible] KEARNEY ST.
DENVER, COLORADO

RCA VICTOR MODEL 3-HS-6 (Ch. RS-145, RS-145X)

TRADE NAME	RCA Victor Model 3-HS-6 (Ch. RS-145, RS-145X)
MANUFACTURER	RCA Victor Div., Radio Corp. of America, Camden, N.J.
TYPE SET	AC Operated 5 Watt Audio Amplifier With 3 Speed Automatic Record Changer
TUBES (Six)	Types 12AX7 Pre-Amp., 12AU7 AF Amp., 6C4 Phase Inv., (2) 6AQ5 Audio Output, 5Y3GT Rectifier
POWER SUPPLY	110-120 Volts - 60 Cycles RATING .47 Amp. @ 117 Volts AC

RECORD CHANGER UNIT - RCA MODEL 930409-16, -17



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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		RCA Victor PART No.	STANDARD REPLACEMENT		
V1	AF Amplifier	12AX7	12AX7	9A	
V2	AF Amplifier	12AU7	12AU7	9A	
V3	Phase Inverter	6C4	6C4	6BG	
V4	Output	6AQ5	6AQ5	7BZ	
V5	Output	6AQ5	6AQ5	7BZ	
V6	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	RCA Victor PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	▲ 35	350	78563							
B	■ 35	350								
C	▲ 10	300								
D	20	25								
C2A	▲ 2A	350	78562	AFH4-54						
B	■ 20	350								
C	▲ 10	350								
D	40	25								
C3	50	6	78573	PRS25/50		BBR50-6T		TC29	TVA-1100	
C4	320		39640							Note 4
C5	.027	400	73554	P488-027		CUB4S27		PT4127	4TM-S27	Note 1
C6	.047	400	73553	P488-047	DF-503	CUB4S47		PT4147	4TM-S47	Note 2
C7	.018	400	58476	P488-018		CUB4S18		PT4118	4TM-S18	
C8	.018	600	77469	P488-018		CUB4S18		PT4118	4TM-S18	Note 3
C9	.047	200	73558	R288-047	DF-503	PJ2S47		PT4147	2TM-S47	
C10	.0047	400	73920	P688-0047	D6-472	CUB6D47	GP2-333-472	PT6247	6TM-D47	
C11	82	500	39626	1469-000075		22R5Q82		MCB230	1FM-475	
C12	82	500	39626	1469-000075		22R5Q82		MCB230	1FM-475	
C13	82	500	39626	1469-000075		22R5Q82		MCB230	1FM-475	
C14	220	500	39636	1469-0002		22R5T22		MCB220	1FM-32	
C15	.27	400	78571							
C16	.27	400	78571							
C17	.27	400	78571							
C18	150	500	39632							Note 5

Note 1. Chassis RS-145 uses an .033MMF @400Vin this application (Part No. 73552).
Note 2. Chassis RS-145 uses an .01MMF @400V in this application (Part No. 73561).
Note 3. Chassis RS-145 uses an .015MMF @ 200V in this application (Part No. 73797).
Note 4. Used in chassis RS-145 only.
Note 5. Used in chassis RS-145X only.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	RCA Victor PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	78565				UDT-283	Volume tapped @ 160K-100K
B	Switch		Not Req.				US-26	Attach to R1A
R2A	1 Meg	½	78580	Q13-137	A47-1Meg-Z	B-70	U-53	Bass
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R2A
R3	750KΩ	½	78566				UDT-289	Treble tapped @ 475K & 210K
R4	100Ω	1	78567					Hum bucking-wire wound

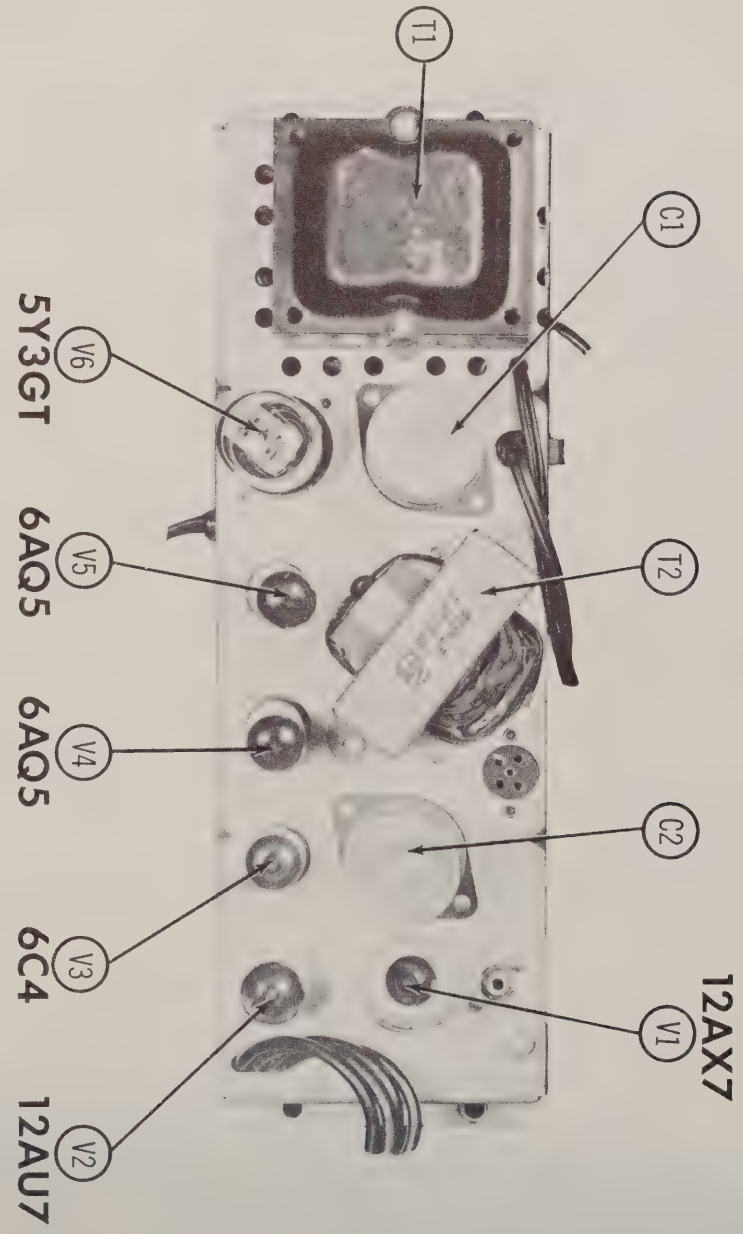
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	RCA Victor PART No.	IRC PART No.	
R5	47KΩ	½	503347	BTS-47K	Note 1
R6	3300Ω	½	503233	BTS-3300	
R7	220KΩ	½	503422	BTS-220K	
R8	220KΩ	½	503422	BTS-220K	
R9	15KΩ	½	503315	BTS-15K	Note 2
R10	470KΩ	½	503447	BTS-470K	
R11	3300Ω	½	503233	BTS-3300	
R12	150KΩ	½	503415	BTS-150K	
R13	15KΩ	½	503315	BTS-15K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	RCA Victor PART No.	IRC PART No.	
R21	82KΩ	½	503382	BTS-82K	
R22	3300Ω	½	503233	BTS-3300	
R23	56KΩ	½	503356	BTS-56K	
R24	22KΩ	½	503322	BTS-22K	
R25	2700Ω	½	503227	BTS-2700	
R26	27KΩ	½	503327	BTS-27K	
R27	470KΩ5%	1	503447		
R28	330Ω	2	523133	BTB-330	
R29	470KΩ5%	1	503447		

(CONT'D ON NEXT PAGE)

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (cont)

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA RCA Victor PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R14	680KΩ	½	503468	BTS-680K	
R15	22KΩ	½	503322	BTS-22K	
R16	8200Ω	½	503282		
R17	3300Ω	½	503233	BTS-3300	
R18	120KΩ	½	503412	BTS-120K	
R19	10KΩ 5%	½	503310		
R20	82KΩ	½	503382	BTS-82K	

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA RCA Victor PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R30	4700Ω	½	503247	BTS-4700	
R31	2200Ω	7	985355-5		
R32	2Ω	1	78570		
R33	2Ω	1	78570		
R34	68Ω	½		BTS-68	
R35	22KΩ	½	503322	BTS-22K	

Note 1. Chassis RS-145 uses a 120KΩ resistor in this application (Part No. 503412)
Note 2. Chassis RS-145 uses a 4700Ω resistor in this application (Part No. 503247)

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA RCA Victor PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.
T1	117VAC @ .47A	514VCT .056A	5VAC @ 2A	6.3VAC @ 2.6A	78569	PM-8404①②	P-3051①②	P-8B①②	P-9207①②	

① Drill new mounting holes.
② Tape 6.3V center tap.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA RCA Victor PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	NOTES
T2	9.3KΩ CT	8Ω tapped *	78568						* .38ΩDC feedback winding.

SPEAKER

ITEM No.	RATINGS SIZE	RATINGS FIELD	RATINGS V. C. IMP.	REPLACEMENT DATA RCA Victor PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1	12"	PM	8Ω	78575	ST-101 Mod. P12-T	12A6	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA RCA Victor PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	SHURE PART No. CARTRIDGE	SHURE PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE	REMARKS
M1	78634							

PHONO NEEDLE

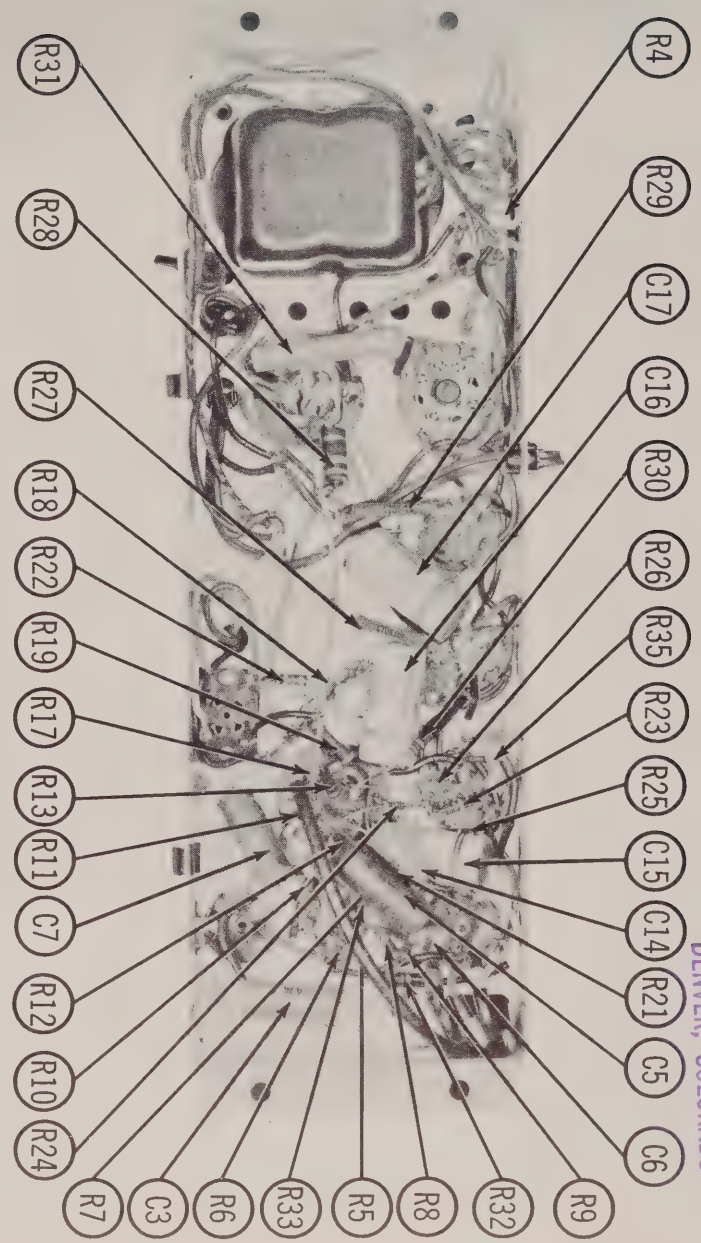
(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	RCA Victor PART No.	JENSEN PART No.	PERMO PART No.	WALCO PART No.	REMARKS
M2		† GE-11	† AC-410 ♦† AC-410D1 ♦ AC-410D	† W-66TPS	† Jewel ♦ Diamond

MISCELLANEOUS

ITEM No.	PART NAME	RCA Victor PART No.	NOTES
M3	Dial light	11765	# 51 bayonet
M4	Switch	78618	Speaker
	Knob	77735	Speaker switch-brown
	Knob	77736	Speaker switch-med. beige
	Knob	78576	Volume on tone- maroon
	Knob	78577	Volume on tone-med. beige

CHASSIS—BOTTOM VIEW



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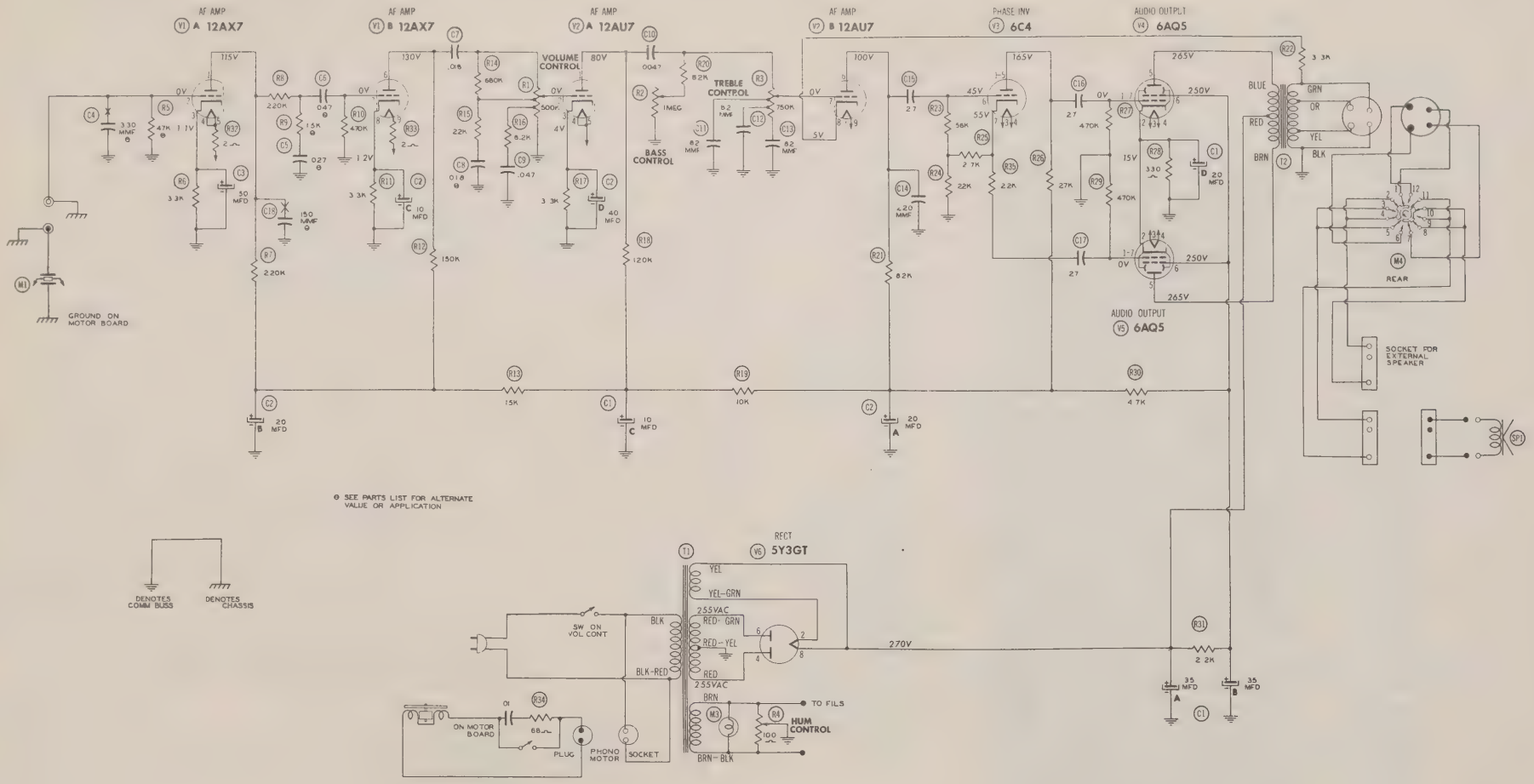
3924 MEADE ST
DENVER, COLORADO

RCA VICTOR
MODEL 3-HS-6 (Ch. RS-145, RS-145X)



⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12AX7	† 250KΩ	47KΩ	3. 3KΩ	25Ω	25Ω	† 180KΩ	470KΩ	3. 3KΩ	25Ω
V 2	12AU7	† 135KΩ	400KΩ	3. 3KΩ	25Ω	25Ω	† 90KΩ	1 Meg	3. 3KΩ	25Ω
V 3	6C4	† 34KΩ	22KΩ	25Ω	25Ω	† 34KΩ	78KΩ	25KΩ		
V 4	6AQ5	470KΩ	330Ω	25Ω	25Ω	† 275Ω	† 2. 2KΩ	470KΩ		
V 5	6AQ5	470KΩ	330Ω	25Ω	25Ω	† 275Ω	† 2. 2KΩ	470KΩ		
V 6	5Y3GT	INF	200KΩ	INF	110Ω	INF	115Ω	INF	200KΩ	

† MEASURED FROM PIN 8 OF V6.

THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Normal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

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3924 MEADE ST.
DENVER, COLORADO

ROLAND
MODELS 8XF3-M, 8XF4-M

ROLAND
MODELS 8XF3-M, 8XF4-M

TRADE NAME	Roland Models 8XF3-M, 8XF4-M
MANUFACTURER	Roland Radio Corp., 12-30 Anderson Ave., Mt. Vernon, N.Y.
TYPE SET	AC Operated AM-FM-Phono Combination Superheterodyne Receiver
TUBES (Seven)	Types 6BJ6 RF Amp., 12AT7 FM Mixer-FM Osc., 12BE6 Conv., 6BJ6 1st. FM-AM IF Amp., 12AU6 2nd. FM IF Amp., 19T8 Ratio Det.-AM Det.-AF Amp., 50C5 Audio Output
POWER SUPPLY	110-120 Volts AC-60 Cycles RATING .22 Amp. @ 117 Volts AC
TUNING RANGE -BROADCAST	540-1650KC FREQ.MOD. 88-108MC

FOR SERVICE INFORMATION ON RECORD CHANGER UNIT - SEE V-M MODEL 950, PHOTOFACT SET #216, FOLDER 11 OR RECORD CHANGER MANUAL CM-5.

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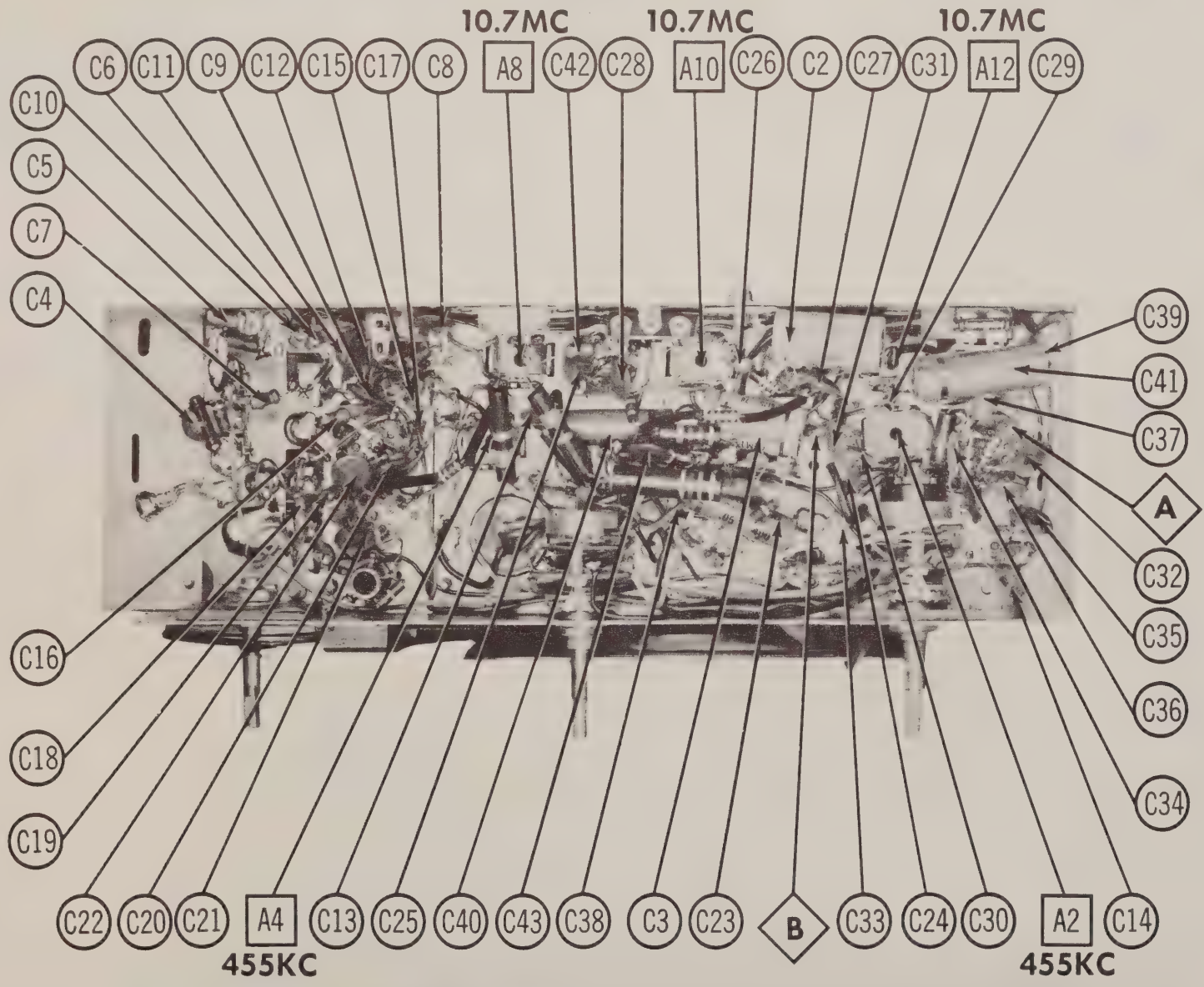
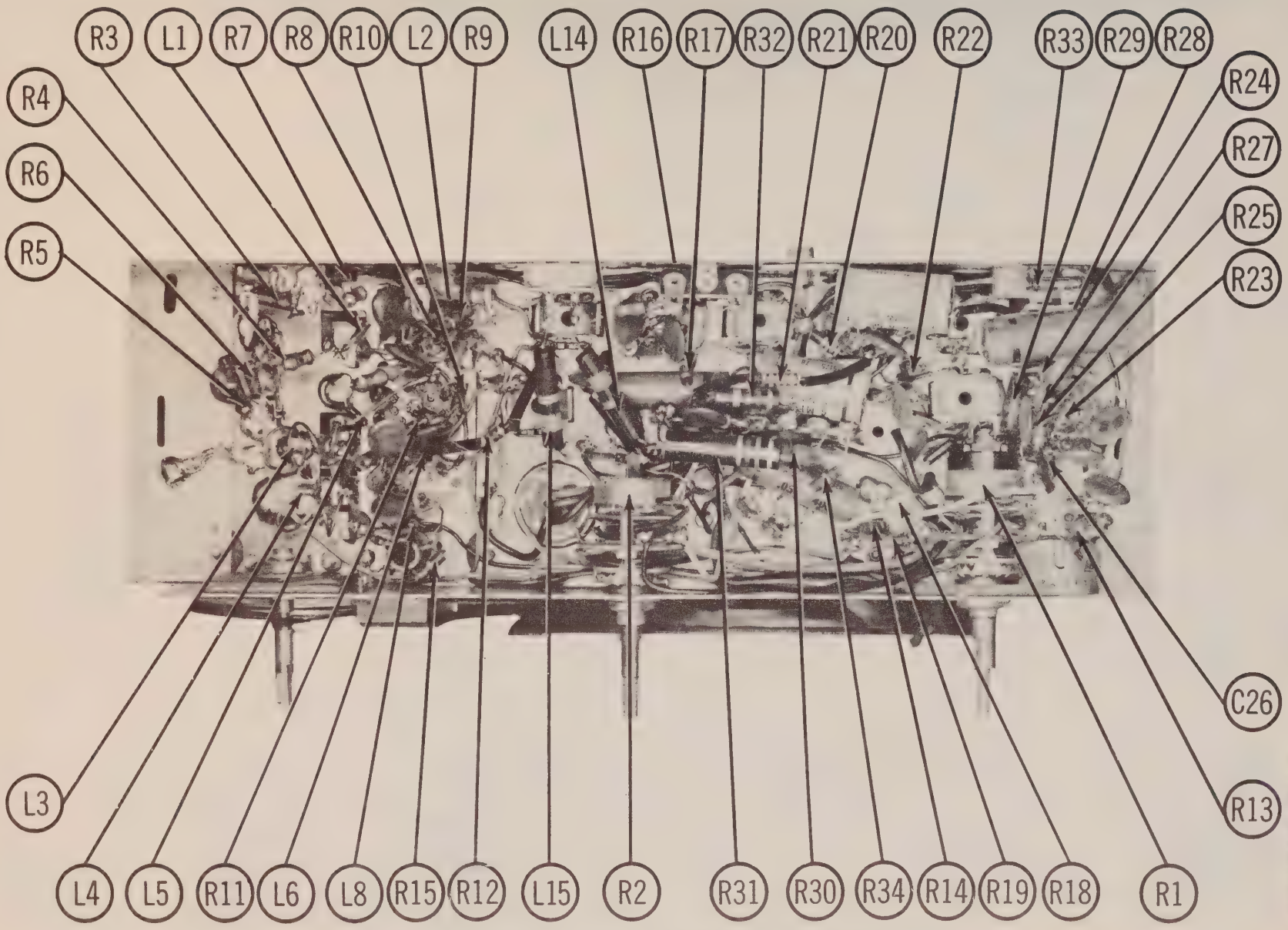


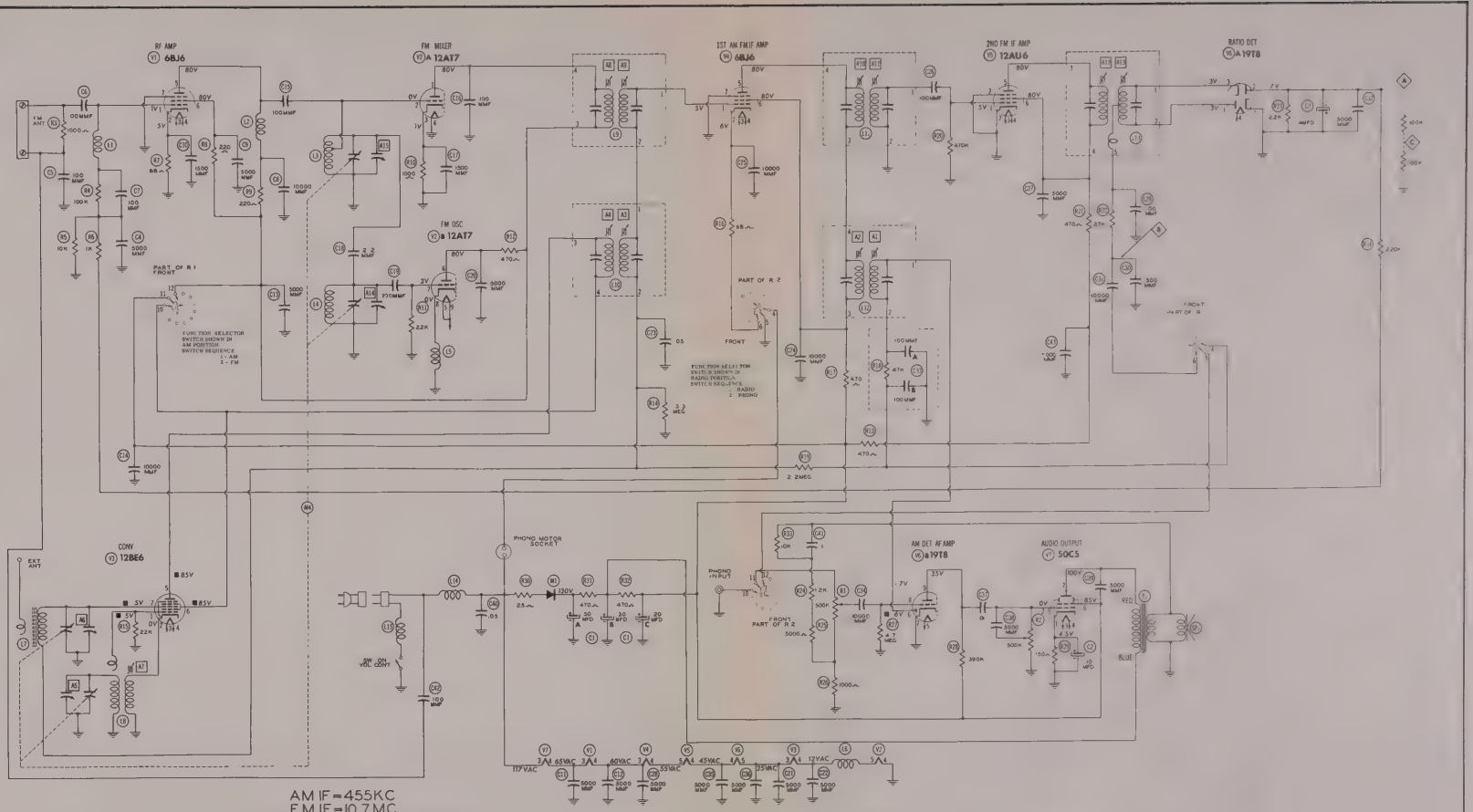
CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

ROLAND
MODEL SXF3-M

UNIVERSITY OF
DENVER, COLORADO



AM IF=455KC
FM IF=10.7MC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BJ6	1100Ω	680Ω	700Ω	830Ω	0Ω	1 - 68kΩ	1 - 68kΩ	0Ω	
V 2	12AT7	1 - 68Ω	0Ω	180Ω	0Ω	0Ω	1 - 2KΩ	220kΩ	0Ω	
V 3	12BE6	330kΩ	0Ω	250Ω	130Ω	1.6Ω	68kΩ	1.2MEG	2.2MEG	
V 4	6BJ6	2.2MEG	880Ω	650Ω	560Ω	1 - 68Ω	1 - 68kΩ	0Ω		
V 5	12AU6	470kΩ	0Ω	560Ω	450Ω	1 - 68Ω	1 - 68kΩ	0Ω		
V 6	19T8	0MEG	220Ω	0MEG	48Ω	250Ω	∞ MEG	0Ω	4.7MEG	1.35MEG
V 7	50C5	350Ω	500kΩ	125Ω	700Ω	500kΩ	1.5MEG	1.35MEG		

MEASUREMENTS ARE OF FM POSITION UNLESS OTHER WISE SPECIFIED
∞ MEANS RED IN AM POSITION
1 MEASURED FROM OUTPUT OF 5C

1 DC voltage measurements taken with vacuum tube voltmeter
AC voltages measured at 1000 ohms per volt
2 Socket connections are shown as bottom views
3 Measured values are from socket pin to chassis negative
4 Line voltage maintained at 117 volts for voltage readings
5 Resistance values of components which are shown as ± percentage indicate a tolerance of ± 10% in voltage and resistance readings
6 Volume control at maximum no signal applied for voltage measurements

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Turn tuning gang fully closed and set pointer to last reference mark at low frequency end of dial back plate .

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 12BE6 (V3). Low side to chassis.	455KC (400∿ Mod)	AM	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	"	"	1650KC	"	"	"	A5	"
3.		Loop	1400KC	"	Tune to 1400KC signal	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4.		"	600KC	"	Tune to 600KC signal	"	A7	Adjust for maximum output while rocking tuning gang thru 1600KC signal. Repeat steps 2 and 3.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (±1%) resistors in series from point (A) to chassis. The junction of these two resistors is alignment point C as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	.1MFD	High side to pin 2 (grid) of 12AT7 (V2). Low side to chassis.	10.7MC (Unmod)	FM	Tuning gang fully open.	DC probe to point (A). Common to chassis.	A8, A9, A10, A11, A12	Adjust for maximum deflection.
5.	"	"	"	"	"	DC probe to point (B). Common to chassis.	A13	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4.	.1MFD	High side to pin 2 (grid) of 12AT7 (V2). Low side to chassis.	10.7MC (450KC Swp)	FM	Tuning gang fully open	Vert. amp. to point (A). Low side to chassis.	A8, A9, A10, A11, A12	Disconnect stabilizing capacitor C3. Adjust for curve of maximum amplitude and symmetry similar to Fig. 1.
5.	"	"	"	"	"	Vert. amp. to point (C). Low side to chassis.	A13	Reconnect stabilizing capacitor C3. Adjust so that 10.7MC occurs at center of crossover lines as in Fig. 2. SLIGHTLY retouch A12 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
6.	270Ω carbon resistor	High side to FM antenna terminal (disconnect FM line antenna). Low side to chassis.	108.5MC (Unmod)	FM	Tuning gang fully open	DC probe to point (A). Common to chassis.	A14	Adjust for maximum deflection.
7.	"	"	105MC	"	Tune to 105MC signal	"	A15	"
	The following adjustments should be made only if necessary for proper tracking to cover the FM range.							
8.	270Ω carbon resistor	High side to FM antenna terminal. Low side to chass chassis.	87.5MC	FM	Tuning gang fully closed.	DC probe to point (A). Common to chassis.	L4	Compress or expand L4 for maximum deflection. Repeat steps 6 and 8 until proper oscillator tracking is obtained.
9.	"	"	90MC	" "	Tune to 90MC signal	"	L3	Compress or expand L3 for maximum deflection while rocking tuning gang thru 90MC signal . Repeat steps 7 and 9 until proper RF tracking is obtained.

FIG. 1

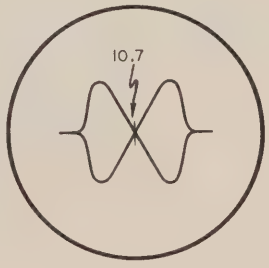


FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		ROLAND PART No.	STANDARD REPLACEMENT		
V1	RF Amplifier	6BJ6	6BJ6	7CM	
V2	FM Mixer-FM Oscillator	12AT7	12AT7	9A	
V3	Converter	12BE6	12BE6	7CH	
V4	1st FM AM Amp.	6BJ6	6BJ6	7CM	
V5	2nd FM IF Amp.	12AU6	12AU6	7BK	
V6	FM Ratio Det. - AM Det-AF Amp.	19T8	19T8	9E	
V7	Output	50C5	50C5	7CV	

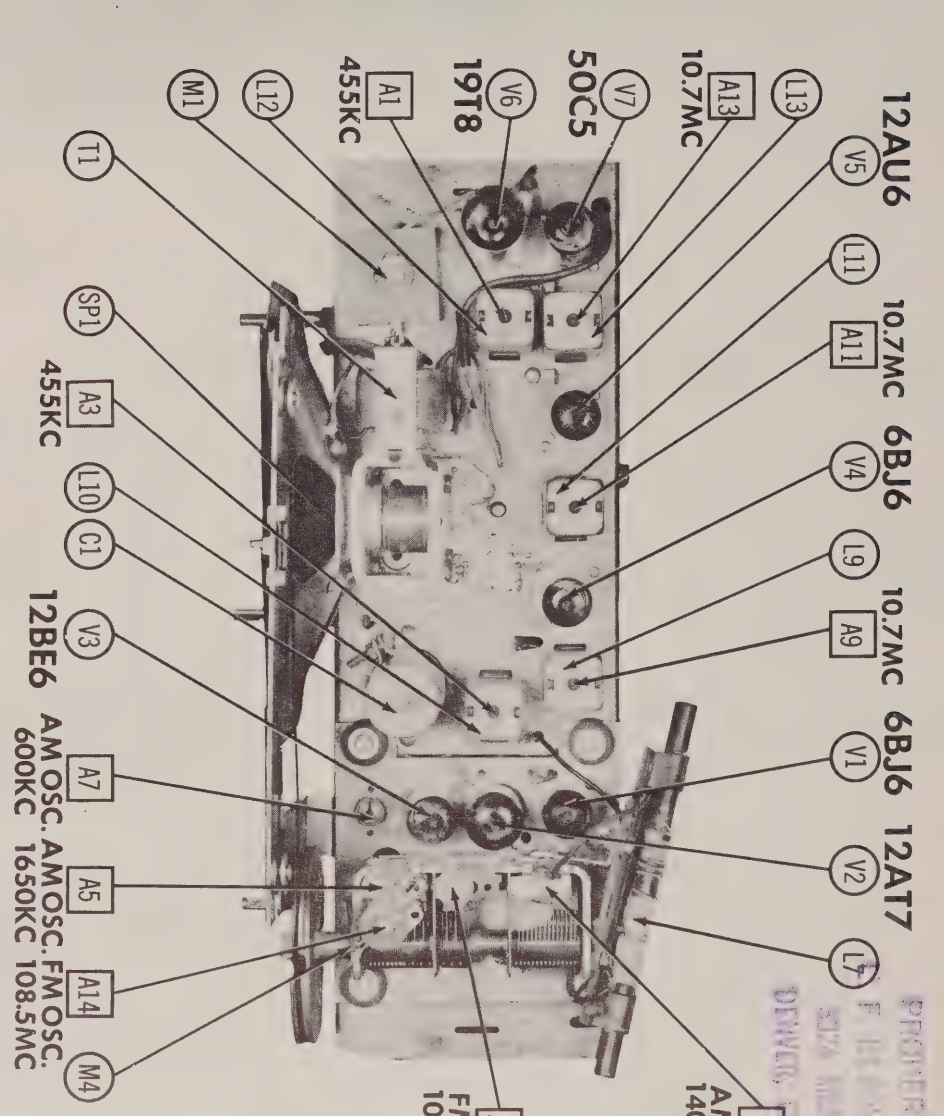
CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA ROLAND PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	50	150		PRS150/50-30-20		BBRT44215		3N532	TVA-3448	Red
B	30	150								Blue
C	20	150								Green
C2	10	25		PRS25/10		BR102		TC22	TVA-1204	
C3	4	100		PRS150/4		BR415		TC40	TVA-1402	
C4	5000			BPD-005	DD-502	K080	801-005	DC-525	5HK-D5	
C5	100			SI100	D6-101	TP34	GP1K-101	UC-531	5GA-T1	
C6	100			SI100	D6-101	TP34	GP1K-101	UC-531	5GA-T1	
C7	100			SI100	D6-101	TP34	GP1K-101	UC-531	5GA-T1	
C8	10000			BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C9	5000			BPD-005	DD-502	K080	801-005	DC-525	5HK-D5	
C10	1500			BPD-0015	DD-152	K071	801-0015	DC-5215	5HK-D15	
C11	5000			BPD-005	DD-502	K080	801-005	DC-525	5HK-D5	
C12	5000			BPD-005	DD-502	K080	801-005	DC-525	5HK-D5	
C13	5000			BPD-005	DD-502	K080	801-005	DC-525	5HK-D5	
C14	10000			BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C15	100			SI100	D6-101	TP34	GP1K-101	UC-531	5GA-T1	
C16	100			SI100	D6-101	TP34	GP1K-101	UC-531	5GA-T1	
C17	1500			BPD-0015	DD-152	K071	801-0015	DC-5215	5HK-D15	
C18	2.2									
C19	100			SI100	D6-101	TP34	GP1K-101	UC-531	5GA-T1	
C20	5000			BPD-005	DD-502	K080	801-005	DC-525	5HK-D5	
C21	5000			BPD-005	DD-502	K080	801-005	DC-525	5HK-D5	
C22	5000			BPD-005	DD-502	K080	801-005	DC-525	5HK-D5	
C23	.05	400		P488-05	DF-503	CUB4S5		PT415	4TM-S5	
C24	10000			BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C25	10000			BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C26	100			SI100	D6-101	TP34	GP1K-101	UC-531	5GA-T1	
C27	5000			BPD-005	DD-502	K080	801-005	DC-525	5HK-D5	
C28	5000			BPD-005	DD-502	K080	801-005	DC-525	5HK-D5	
C29	100			SI100	D6-101	TP34	GP1K-101	UC-531	5GA-T1	
C30	1500			BPD-0015	DD-152	K071	801-0015	DC-5215	5HK-D15	
C31	10000			BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C32	5000			BPD-005	DD-502	K080	801-005	DC-525	5HK-D5	
C33A	100		♦PA-97	♦PC-50	♦111TM1	♦1403-01		UC-531	♦100C1	
B	100							UC-531		
C34	10000			BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C35	5000			BPD-005	DD-502	K080	801-005	DC-525	5HK-D5	
C36	5000			BPD-005	DD-502	K080	801-005	DC-525	5HK-D5	
C37	.01	600		P688-01	D6-103	CUB6S1	GP2-333-103	PT611	6TM-S1	
C38	5000			BPD-005	DD-502	K080	801-005	DC-525	5HK-D5	
C39	5000			BPD-005	DD-502	K080	801-005	DC-525	5HK-D5	
C40	.05	400		489ZX-05	DF-503	PJ4S5		PT415	4TM-S5	
C41	.1	400		P488-1	DF-104	CUB4P1		PT401	4TM-P1	
C42	100			SI100	D6-101	TP34	GP1K-101	UC-531	5GA-T1	
C43	5000			BPD-005	DD-502	K080	801-005	DC-525	5HK-D5	

♦ Items C33A, C33B and R18 are combined in one unit.

CHASSIS—TOP VIEW



PROPERTY OF
DENVER, COLORADO

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	ROLAND PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1	500KΩ	½	VC40					AM-FM switch, Volume & Off/on Switch
R2	500KΩ	½	VC40					Radio-Phono switch & tone

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	ROLAND PART No.	IRC PART No.	
R3	1000Ω	½		BTS-1000	
R4	100KΩ	½		BTS-100K	
R5	10KΩ	½		BTS-10K	
R6	1000Ω	½		BTS-1000	
R7	68Ω	½		BTS-68	
R8	220Ω	½		BTS-220	
R9	220Ω	½		BTS-220	
R10	1000	½		BTS-1000	
R11	22KΩ	½		BTS-22K	
R12	470Ω	½		BTS-470	
R13	470Ω	½		BTS-470	
R14	3.3 Meg	½		BTS-3.3 Meg	
R15	22KΩ	½		BTS-22K	
R16	68Ω	½		BTS-68	
R17	470Ω	½		BTS-470	
R18	47KΩ	½	♦	BTS-47K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	ROLAND PART No.	IRC PART No.	
R19	2.2 Meg	½		BTS-2.2Meg	
R20	470KΩ	½		BTS-470K	
R21	470Ω	½		BTS-470	
R22	27KΩ	½		BTS-27K	
R23	22KΩ	½		BTS-22K	
R24	1200Ω	½		BTS-1200	
R25	5000Ω	½			
R26	1000Ω	½		BTS-1000	
R27	4.7Meg	½		BTS-4.7Meg	
R28	390KΩ	½		BTS-390K	
R29	150Ω	1		BTA-150	
R30	25Ω	1			
R31	470Ω	2		BTB-470	
R32	470Ω	1		BTA-470	
R33	10KΩ	½		BTS-10K	
R34	220KΩ	½		BTS-220K	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	ROLAND PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	
T1	2.4KΩ	3.5Ω	Part of speaker SP-49A	A-3876 ①	A-2928 ①	S-1X ①	Z1001 ①	TS-24S50 ①	① Bend mounting tabs down, file slots. Mount on original mounting bracket.

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	ROLAND PART No.	VIKING PART No.	QUAM PART No.	
SP1	4"X6"	PM	3.5Ω	SP-49A	46J6	46A07	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	ROLAND PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	FM RF Choke	.6Ω			19-1005		4612	10 Microhenries
L2	FM RF Choke	.6Ω			19-1005		4612	10 Microhenries
L3	FM RF Coil	.0Ω (tapped)						
L4	FM Osc. Coil	0Ω						
L5	Cathode Choke	.6Ω			19-1005		4612	10 Microhenries
L6	Fil. Choke	.6Ω			19-1005		4612	10 Microhenries
L7	AM Ant. Coil	.4Ω		LPFE-14				
L8	AM Osc. Coil	.4Ω	6.5Ω		14-1073		69-Osc.	
L9	1st FM IF	.5Ω	.6Ω	IFT-51	16-3487	FM-254	1463	
L10	1st AM IF	9Ω	9Ω	IFT-55	16-6758	BC-352	12-C1	
L11	2nd FM IF	.7Ω	.7Ω	IFT-52	16-3487	FM-254	1463	
L12	2nd AM IF	9Ω	9Ω	IFT-55	16-6758	BC-353	12-C2	
L13	Ratio Det.	1.7Ω	.9ΩCT	IFT-53	17-3487 †	FM-255	1465	Tertiary winding= .4Ω
L14	Line Choke	6.5Ω			19-1004		4610	5.5 Microhenries
L15	Line Choke	6.5Ω			19-1004		4610	5.5 Microhenries

† Cut out chassis hole and drill mounting holes.

PARTS LIST AND DESCRIPTIONS (Continued)

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA						NOTES
	CURRENT	ROLAND PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	SARKES TARZIAN PART No.	SELETRON PART No.	
M1	.057A		1004A	RS100	6S100	100	5M1	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA							REMARKS
	ROLAND PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M2						43	O-2 S-2	

ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGE LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENT SEE BELOW.

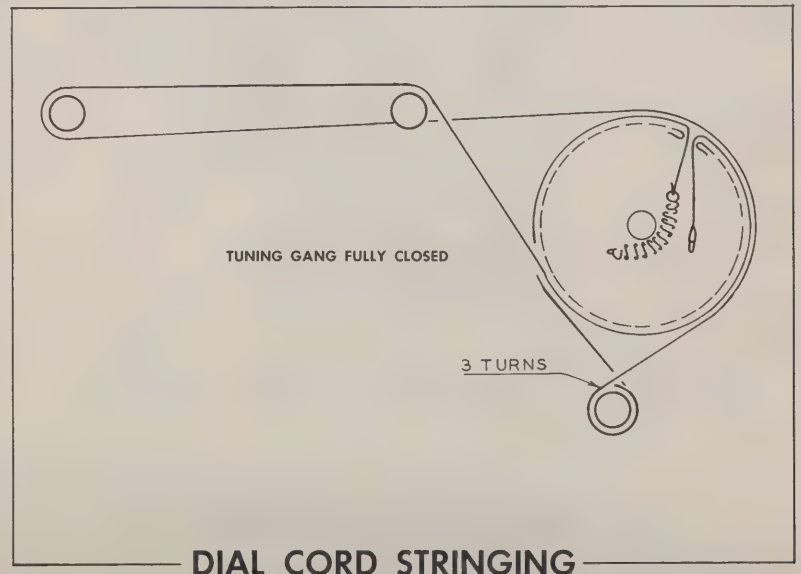
PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA				REMARKS
	ROLAND PART No.	JENSEN PART No.	PERMO PART No.	WALCO PART No.	
M3		* S-66	*AC-434 *♦AC-434D1 *♦AC-434D2 ♦ AC-434D	* S-66	* Jewel ♦ Diamond

MISCELLANEOUS

ITEM No.	PART NAME	ROLAND PART No.	NOTES
M4	Tuning cap Trimmer cap	CV-24	(37-496MMF, 15-145MMF) 2.5-13MMF



DIAL CORD STRINGING

ROLAND
MODEL 10TF1

PROPERTY OF
L. F. [illegible]
[illegible]
DENVER COLORADO

ROLAND
MODEL 10TF1

ROLAND
MODEL 10TF1

TRADE NAME	Roland Model 10TF1
MANUFACTURER	Roland Radio Corp., 12-30 Anderson Ave., Mt. Vernon, N.Y.
TYPE SET	AC Operated AM-FM Superheterodyne Receiver
TUBES (Ten)	Types 6BA6 FM RF Amp., 12AT7 FM Mixer-Osc., 6BA6 AM RF Amp., 6BE6 AM Conv., 6BA6 1st. FM-AM IF Amp., 6AU6 2nd. FM IF Amp., 6AL5 Ratio Det., 6AT6 AM Det., -AF Amp., 6V6GT Audio Output, 5Y3GT Rectifier.
POWER SUPPLY	110-120 Volts AC RATING .63 Amp. @ 117 Volts AC
TUNING RANGE - BROADCAST	540-1650KC FREQ. MOD. 88-108MC

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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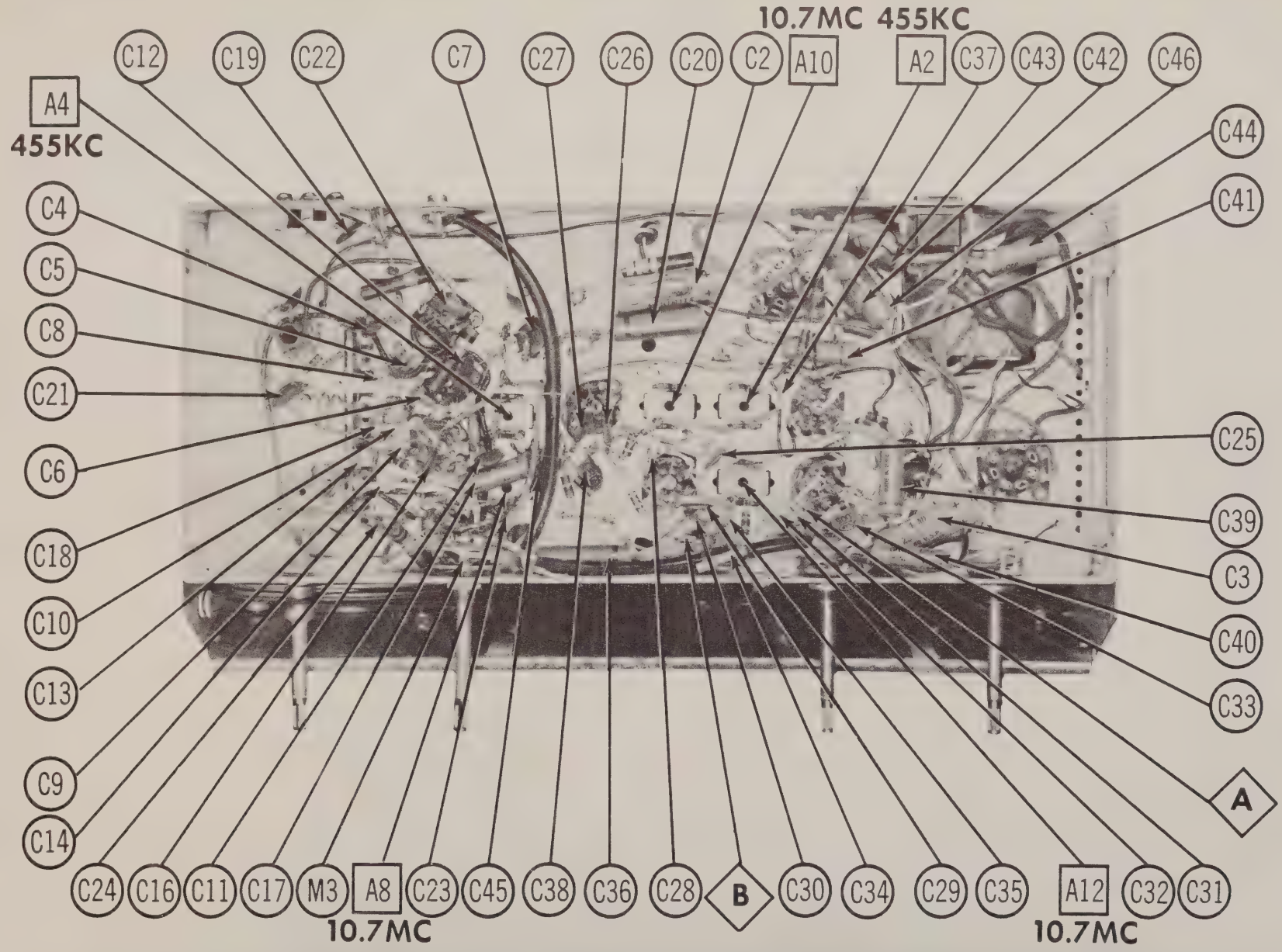
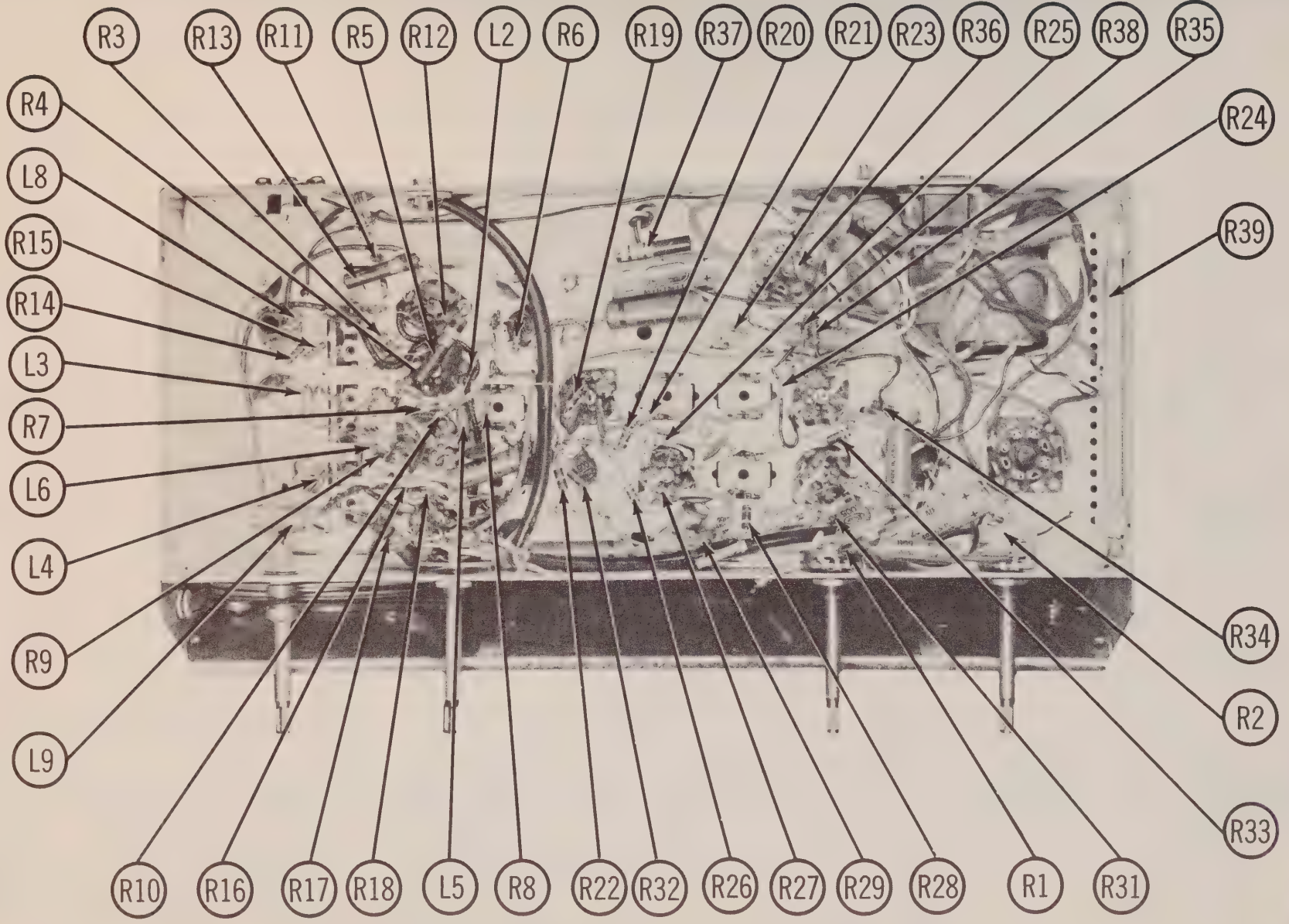


CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

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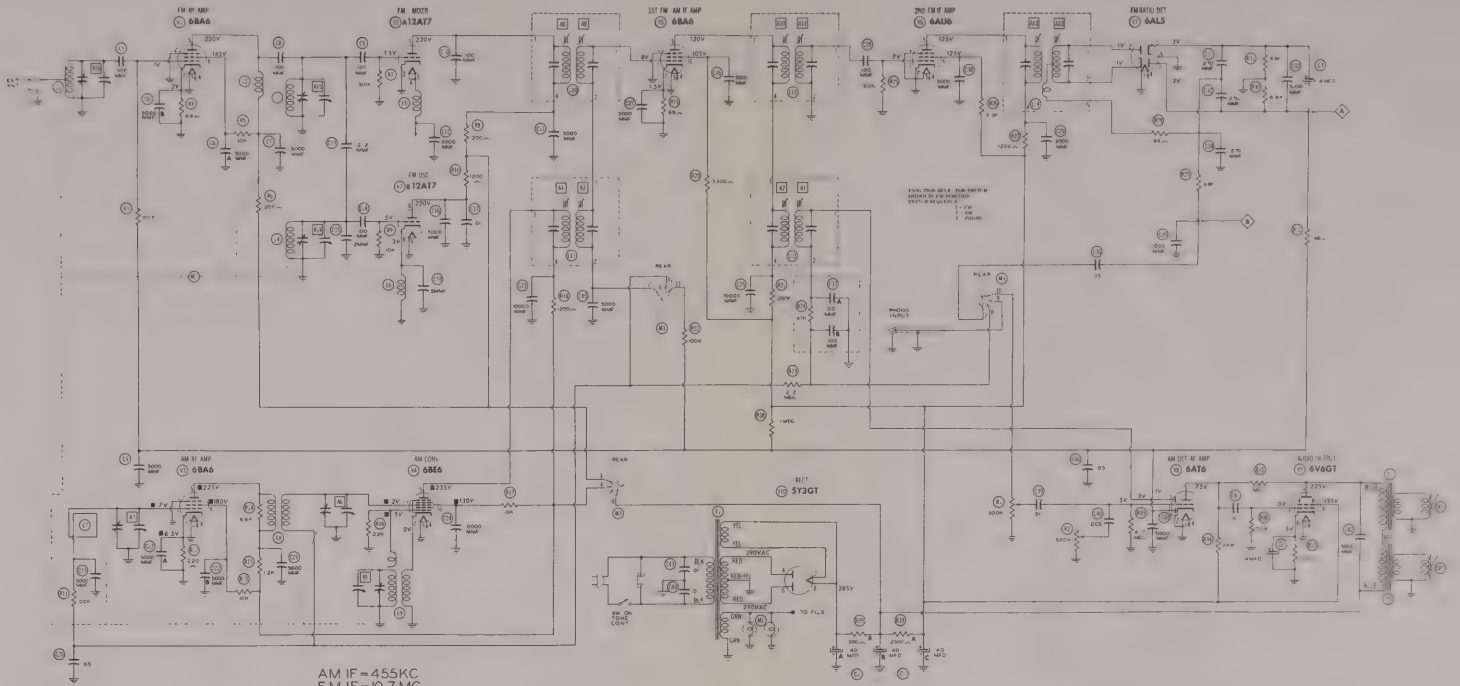

AM IF = 455KC
F M IF = 10.7 MC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BA6	1. 1Meg	0Ω	0Ω	.1Ω	11. 7KΩ	† 11. 7KΩ	68Ω		
V 2	12AT7	† 1. 7KΩ	510KΩ	0Ω	.1Ω	.1Ω	† 1. 7KΩ	10KΩ	.4Ω	0Ω
V 3	6BA6	■ 2. 8Meg	0Ω	0Ω	1Ω	†■1. 7KΩ	†■10. 5KΩ	220Ω		
V 4	6BE6	22KΩ	.5Ω	0Ω	.1Ω	†■ 500Ω	†■10. 5KΩ	2. 7Meg		
V 5	6BA6	■2. 7Meg 1. 1Meg	0Ω	0Ω	.1Ω	† 4. 2KΩ	† 6. 3KΩ	68Ω		
V 6	6AU6	510KΩ	0Ω	0Ω	.1Ω	† 4. 2KΩ	† 6. 3KΩ	0Ω		
V 7	6AL5	570KΩ	570KΩ	0Ω	.1Ω	6. 8KΩ	0Ω	6. 8KΩ		
V 8	6AT6	4. 7Meg	0Ω	0Ω	.1Ω	■ 550KΩ	1 Meg	† 100KΩ		
V 9	6V6GT	INF	0Ω	† 975Ω	† 3KΩ	510KΩ	INF	.1Ω	330Ω	
V 10	5Y3GT	INF	300KΩ	INF	140Ω	INF	140Ω	INF	300KΩ	

ALL MEASUREMENTS IN FM POSITION UNLESS OTHERWISE SPECIFIED.
■ MEASURED IN AM POSITION.
† MEASURED FROM PIN 8 OF V10.

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249-14

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

With tuning gang fully closed set dial pointer 1/4" to the left of "88" on the dial.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

AM ALIGNMENT

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 6BE6 (V4). Low side to chassis.	455KC (400∿Mod)	AM	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.		Loop	1650KC	"	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1400KC	"	"	"	A6, A7	"

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	.1MFD	High side to pin 2 (grid) of 12AT7 (V2). Low side to chassis.	10.7MC (Unmod)	FM	Tuning gang fully open	DC probe to point Ⓐ. Common to chassis.	A8, A9, A10, A11, A12	Adjust for maximum deflection.
5.	"	"	"	"	"	DC probe to point Ⓑ. Common to chassis.	A13	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4.	.1MFD	High side to pin 2 (grid) of 12AT7 (V2). Low side to chassis.	10.7MC (450KC Swp)	FM	Tuning gang fully open	Vert. Amp. to point Ⓐ. Low side to chassis.	A8, A9, A10, A11, A12	Disconnect stabilizing capacitor C3. Adjust for curve of maximum amplitude and symmetry similar to Fig. 1.
5.	"	"	"	"	"	Vert. Amp. to point Ⓑ. Low side to chassis.	A13	Reconnect stabilizing capacitor C3. Adjust so that 10.7MC occurs at center of crossover lines as in Fig. 2. SLIGHTLY retouch A12 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
6.	270Ω Carbon Resistors	High side to FM antenna terminal (disconnect link)	108.5MC	FM	Tuning gang fully open	DC probe to point Ⓐ. Common to chassis.	A14	Adjust for maximum deflection.
7.	"	"	105MC	"	105MC	"	A15, A16	"
	The following adjustments should be made only if necessary for proper tracking to cover the FM range.							
8.	270Ω Carbon Resistors	High side to FM antenna terminal. Low side to chassis.	87.5MC	FM	Tuning gang fully closed	DC probe to point Ⓐ. Common to chassis.	L4	Compress or expand L4 for maximum deflection. Repeat steps 6 and 8 until proper oscillator tracking is obtained.
9.	"	"	90MC	"	Tune to 90MC signal	"	L1, L3	Compress or expand L1 and L3 for maximum deflection. Repeat steps 7 and 9 until proper RF tracking is obtained.

FIG. 1

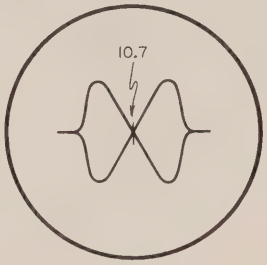


FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: ROLAND PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	FM RF Amplifier	6BA6	6BA6	7BK	
V2	FM Mixer-FM Oscillator	12AT7	12AT7	9A	
V3	AM RF Amplifier	6BA6	6BA6	7BK	
V4	AM Converter	6BE6	6BE6	7CH	
V5	1st FM AM IF Amp.	6BA6	6BA6	7BK	
V6	2nd FM IF Amp.	6AU6	6AU6	7BK	
V7	Ratio Detector	6AL5	6AL5	6BT	
V8	AM Det AF Amp.	6AT6	6AT6	7BT	
V9	Audio Output	6V6GT	6V6GT	7S	
V10	Rectifier	5Y3GT	5Y3GT	5T	

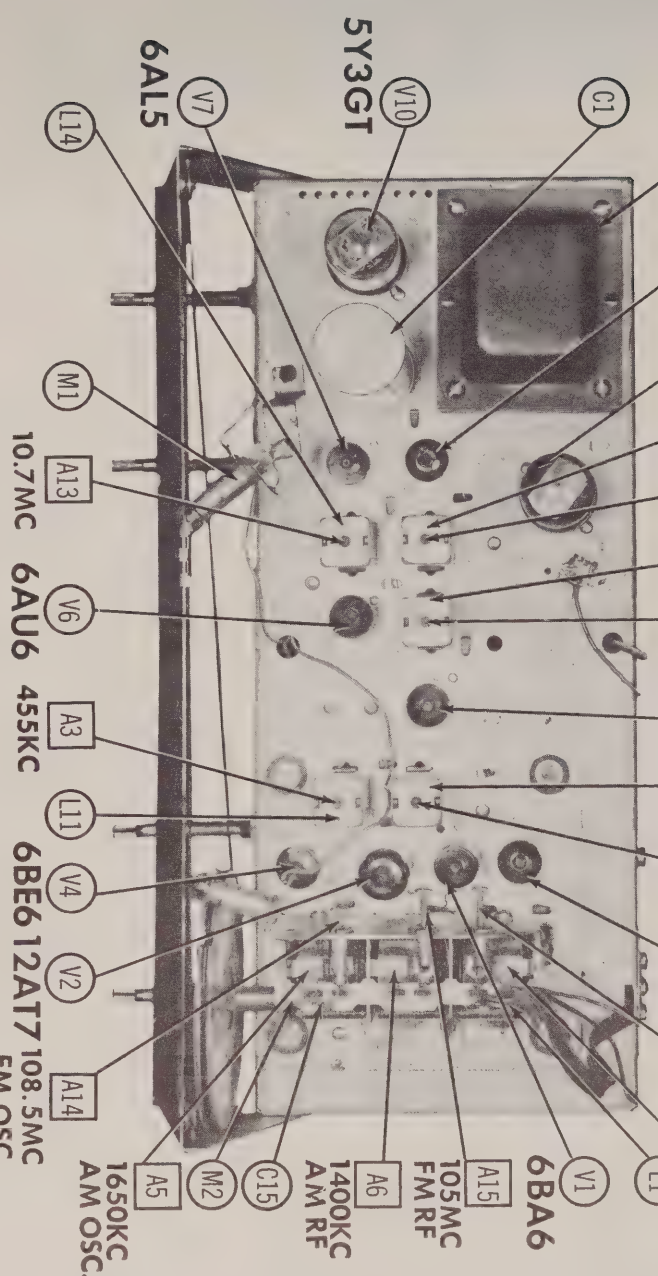
CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	ROLAND PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	▲40	450		AFH3-44		C035		FP377	TVL-3787	
B	■40	450								
C	▲40	450								
C2	4	25		PRS150/4		BBR4-50T		TC30	TVA-1203	
C3	4	25		PRS150/4		BBR4-50T		TC30	TVA-1203	
C4	5000			BPD-005	DD-502	K080	801-005	DC-525	5HK-D5	
C5	1500			SI1500	D6-152	TP54	GP2K-152	UC-5215	5GA-D15	
C6A	5000			BPD-2X005	DD3-502	DK079	801-005	DC-525	5HK-2D47	
B	5000						801-005	DC-525		
C7	5000			BPD-005	DD-502	K080	801-005	DC-525	5HK-D5	
C8	100			SI100	D6-101	TP34	GP1K-101	UC-531	5GA-T1	
C9	100			SI100	D6-101	TP34	GP1K-101	UC-531	5GA-T1	
C10	100			SI100	D6-101	TP34	GP1K-101	UC-531	5GA-T1	
C11	5000			BPD-005	DD-502	K080	801-005	DC-525	5HK-D5	
C12	5000			BPD-005	DD-502	K080	801-005	DC-525	5HK-D5	
C13	2.2			SI2.2NP0	TCZ-2.2	TZ05	NP0K-2R2		5TCCB-V22	
C14	100			SI100	D6-101	TP34	GP1K-101	UC-531	5GA-T1	
C15	2			SI2.2NP0	TCZ-2.2	TZ05	NP0K-2R2		5TCCB-V22	
C16	5000			BPD-005	DD-502	K080	801-005	DC-525	5HK-D5	
C17	.01	600		P688-01	D6-103	CUB6S1	GP2-333-103	PT611	6TM-S1	
C18	5				TCN-5		N750K-050	NT-555	5TCUB-V5	
C19	5000			BPD-005	DD-502	K080	801-005	DC-525	5HK-D5	
C20	.05	400		P488-05	DF-503	CUB4S5		PT415	4TM-S5	
C21	5000			BPD-005	DD-502	K080	801-005	DC-525	5HK-D5	
C22A	5000			BPD-2X005	DD3-502	DK079	801-005	DC-525	5HK-2D47	
B	5000						801-005	DC-525		
C23	5000			BPD-005	DD-502	K080	801-005	DC-525	5HK-D5	
C24	10000			BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C25	10000			BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C26	5000			BPD-005	DD-502	K080	801-005	DC-525	5HK-D5	
C27	5000			BPD-005	DD-502	K080	801-005	DC-525	5HK-D5	
C28	100			SI100	D6-101	TP34	GP1K-101	UC-531	5GA-T1	
C29	5000			BPD-005	DD-502	K080	801-005	DC-525	5HK-D5	
C30	5000			BPD-005	DD-502	K080	801-005	DC-525	5HK-D5	
C31	270			SI270	D6-271	TP41	GP2K-271	UC-5327	5GA-T27	
C32	270			SI270	D6-271	TP41	GP2K-271	UC-5327	5GA-T27	
C33	5000			BPD-005	DD-502	K080	801-005	DC-525	5HK-D5	
C34	270			SI270	D6-271	TP41	GP2L-271	UC-5327	5GA-T27	
C35	1000			BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C36	.05	400		P488-05	DF-503	CUB4S5		PT415	4TM-S5	
C37A	100			♦PA-97	♦PC-50	♦111TM1	♦1403-01	UC-531	♦100C1	
B	100									
C38	5000			BPD-005	DD-502	K080	801-005	DC-525	5HK-D5	
C39	.01	600		P688-01	D6-103	CUB6S1	GP2-333-103	PT611	6TM-S1	
C40	.005	600		P688-005	D6-502	CUB6D5	GP2-333-502	PT625	6TM-D5	
C41	.01	600		P688-01	D6-103	CUB6S1	GP2-333-103	PT611	6TM-S1	
C42	5000			BPD-005	DD-502	K080	801-005	DC-525	5HK-D5	
C43	.01	600		P688-01	D6-103	CUB6S1	GP2-333-103	PT611	6TM-S1	
C44	.01	600		P688-01	D6-103	CUB6S1	GP2-333-103	PT611	6TM-S1	
C45	5000			BPD-005	DD-502	K080	801-005	DC-525	5HK-D5	
C46	.05	400		P488-05	DF-503	CUB4S5		PT415	4TM-S5	

♦ Items C37A, C37B and R24 are combined in one unit.

CHASSIS—TOP VIEW



PROPERTY OF
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DENVER, COLORADO

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	ROLAND PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	VC-36	Q11-133	A47-500K-S	AB-60	U-50	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R1A
R2A	500KΩ	½	VC-37	Q13-133	A47-500K-S	AB-59	U-48	Tone
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R2A
C	Switch		Not Req.	76-1	SWE-12	KB-1	US-26	Attach to R2A

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	ROLAND PART No.	IRC PART No.	
R3	100KΩ	½		BTS-100K	
R4	68Ω	½		BTS-68	
R5	10KΩ	2		BTB-10K	
R6	1200Ω	½		BTS-1200	
R7	510KΩ	½			
R8	1200Ω	½		BTS-1200	
R9	10KΩ	½		BTS-10K	
R10	1200Ω	½		BTS-1200	
R11	100KΩ	½		BTS-100K	
R12	220Ω	½		BTS-220	
R13	10KΩ	2		BTB-10K	
R14	6800Ω	½		BTS-6800	
R15	1200Ω	½		BTS-1200	
R16	22KΩ	½		BTS-22K	
R17	10KΩ	2		BTB-10K	
R18	1200Ω	½		BTS-1200	
R19	68Ω	½		BTS-68	
R20	3300Ω	½		BTS-3300	
R21	1200Ω	½		BTS-1200	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	ROLAND PART No.	IRC PART No.	
R22	100KΩ	½		BTS-100K	
R23	2.2Meg	½		BTS-2.2Meg	
R24	47KΩ	½	♦	BTS-47K	
R25	510KΩ	½			
R26	3300Ω	½		BTS-3300	
R27	1200Ω	½		BTS-1200	
R28	68Ω	½		BTS-68	
R29	68KΩ	½		BTS-68K	
R30	6800Ω	½		BTS-6800	
R31	6800Ω	½		BTS-6800	
R32	1 Meg	½		BTS-1 Meg	
R33	4.7Meg	½		BTS-4.7Meg	
R34	100KΩ	½		BTS-100K	
R35	1 Meg	½		BTS-1 Meg	
R36	510KΩ	½			
R37	330Ω	2		BTB-330	
R38	1 Meg	½		BTS-1 Meg	
R39A	2500Ω	20			
B	500Ω				

■ Items R24 and C37A, C37B are combined in one unit.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	ROLAND PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.
T1	117VAC @ .63A	600VCT .080A	5VAC @ 2A	6.3VAC @ 3.3A		PM-8405 ①				T-22R04 ①②

① Drill new mounting holes.
② Tape 6.3V center tap.

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	ROLAND PART No.	JENSEN PART No.	QUAM PART No.	
SP1	6"	PM	3.8Ω		ST-108 Mod. P6-X	6A1	
SP2	4"	PM	3.1Ω		ST-113 Mod. P4-X	4A07	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	ROLAND PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	
T2	5KΩ	3.8Ω		A-3877②	A-2930②			24S50	① Drill one new mounting hole. ② Bend mounting tabs down, file out slot, mount on orig. mounting bracket.
T3	2.36KΩ	3.1Ω		A-3332	A-3025	S-12X	Z1101	24S50	

PARTS LIST AND DESCRIPTIONS (Continued)

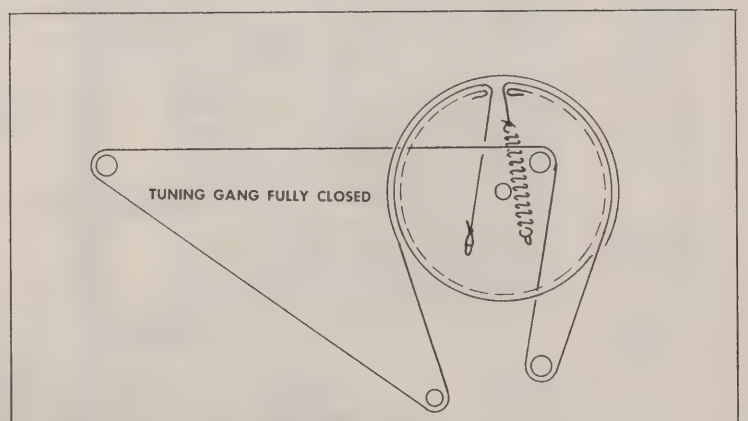
COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	ROLAND PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	FM Ant. Coil	0Ω (tapped)						
L2	FM RF Choke	.6Ω			19-1005		4612	10 Microhenries
L3	FM RF Coil	0Ω						
L4	FM Osc. Coil	0Ω						
L5	Fil. Choke	.6Ω			19-1003		4608	5 Microhenries
L6	Cathode Choke	.4Ω			19-1002		4606	3 Microhenries
L7	AM Loop Ant.	3Ω		LP-8113-PC				
L8	AM RF Coil	35Ω	5.2Ω		14-1072	BC-382	A-5495-RF	
L9	AM Osc. Coil	.5Ω	6.5Ω		14-1073		69-Osc.	
L10	1st FM IF	.5Ω	.6Ω	IFT-51	16-3487	FM-254	1463	
L11	1st AM IF	9Ω	9Ω	IFT-55	16-6758	BC-352	12-C1	
L12	2nd FM IF	.8Ω	.8Ω	IFT-52	16-3487	FM-254	1463	
L13	2nd AM IF	9Ω	9Ω	IFT-56	16-6758	BC-353	12-C2	
L14	Ratio Det.	1.7Ω	1ΩCT	IFT-53	17-3487 †	FM-255	1465	Tertiary winding=.4Ω

† Cut out chassis hole and drill mounting holes.

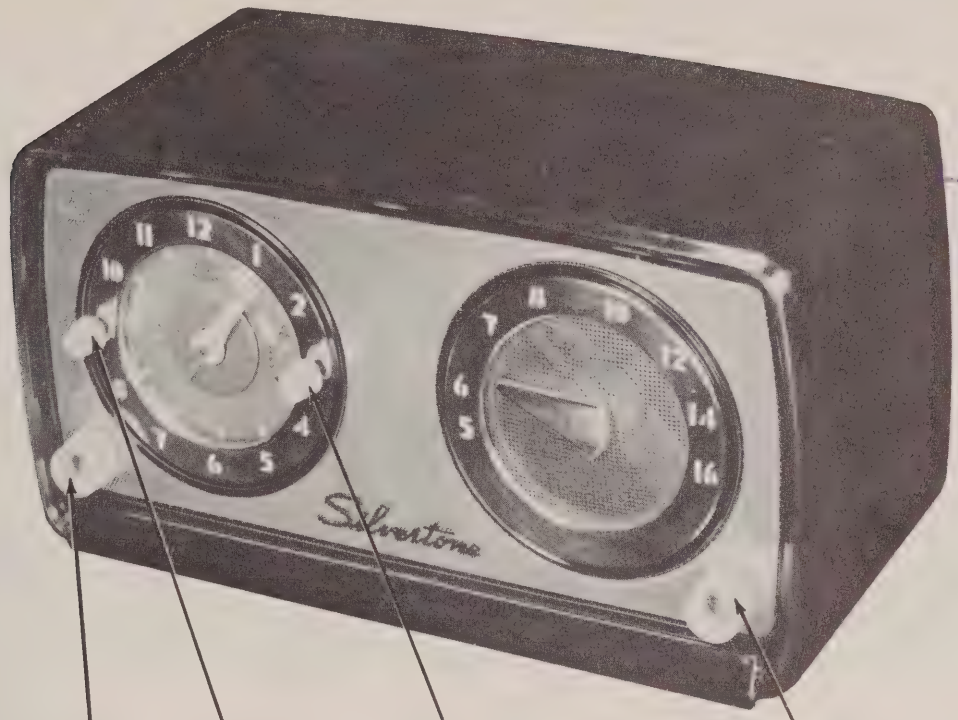
MISCELLANEOUS

ITEM No.	PART NAME	ROLAND PART No.	NOTES
M1	Dial light		# 51 (2 used)
M2	Tuning cap	CV-23	(38-477MMF, 43-492MMF, 18-180MMF)
M3	Switch		Function



DIAL CORD STRINGING

SILVERTONE MODELS
3025, 3026, 3027 (Ch. 132.066)



PROPERTY OF
F. E. ALMENSHIP
3924 MEADE ST.
DENVER, COLORADO

SILVERTONE MODELS
3025, 3026, 3027 (Ch. 132.066)

TRADE NAME	Silvertone Models 3025, 3026, 3027 (Ch. 132.066)
SUPPLIER	Sears Roebuck & Co., 925 S. Homan, Chicago, Ill.
TYPE SET	AC Operated AM Superheterodyne Receiver with Electric Clock
TUBES (Five)	Types 12BE6 Conv., 12BA6 IF Amp., 12AV6 Det.-AVC-AF Amp., 50C5 Audio Output 35W4 Rectifier
POWER SUPPLY	105-120 Volts AC-60 Cycles — RATING .27 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial. Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05MFD	High side to antenna stator lug on tuning gang. Low side to B-.	455KC (400~Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	50MMF	High side to external antenna connection. Low side to B-.	1650KC	"	"	A5	"
3.	"	"	1400KC	Tune to 1400KC signal	"	A6	"
4.	"	"	600KC	Tune to 600KC signal	"		Spread or compress slotted antenna rotor plates for maximum output. Repeat step 3.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

SILVERTONE
MODEL 3025 (Ch. 132.066)

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: Silvertone PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BA6	12BA6	7BK	
V3	Det.-AVC-AF Amp	12AV6	12AV6	7BT	
V4	Audio Output	50C5	50C5	7CV	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA: Silvertone PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	80	150	N41271	PRS150/80-40-20		BBRT8415C		3N538	TVA-3455	Red
B	30	150								Blue
C	20	25								Green
C2	.05	200		P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C3	5			SI5	D6-050	TP06	GP1K-050	ZT-555	5GA-V5	
C4	220			SI220	D6-221	TP39	GP2K-221	UC-5322	5GA-T22	
C5	5000			BPD-005	DD-502	K080	801-005	DC-525	5HK-D5	
C6A	250		♦24084	♦PA-112-3	♦PC-80	♦113TM1	♦1404-01		♦T-1	
B										
C	10000									
C7	.02	400		P488-02		CUB4S2		PT412	4TM-S2	
C8	.05	400		489ZX-05	DF-503	CUB4S5		PT415	4TM-S5	
C9	.05	400		P488-05	DF-503	CUB4S5		PT415	4TM-S5	

♦ Items C6A, C6B, C6C, R6A and R6B are combined in one unit.
When replacing items separately, C6A and C6B should total 250MMF.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA: Silvertone PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1Meg	½	N24026	Q13-137	A47-1Meg-Z	BSK-70	U-53	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA: Silvertone PART No.	IRC PART No.	NOTES
R2	22KΩ	½		BTS-22K	
R3	100Ω	1		BTS-100	
R4	2.2Meg	½		BTS-2.2Meg	
R5	6.8Meg	½		BTS-6.8Meg	

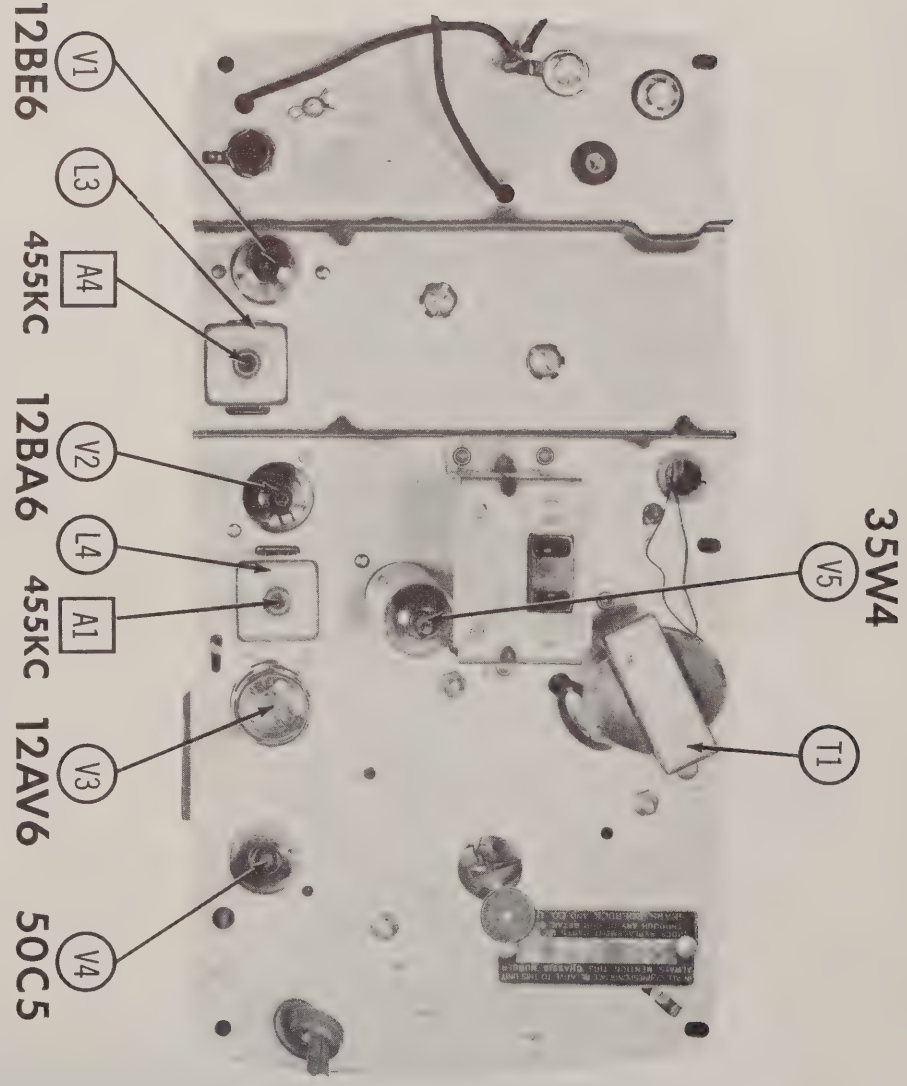
ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA: Silvertone PART No.	IRC PART No.	NOTES
R6A	500KΩ	½	♦N24084		
B	500KΩ	½			
R7	120Ω	½		BTS-120	
R8	1200Ω	1		BTA-1200	
R9	330KΩ	½		BTS-330K	

♦ Items R6A, R6B, C6A, C6B, C6C are combined in one unit.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA: Silvertone PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	NOTES
T1	2.3KΩ	.47Ω	N41366-1	A-3332	A-3025	S-12X	Z1101	24S50①	① Drill one new mounting hole.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

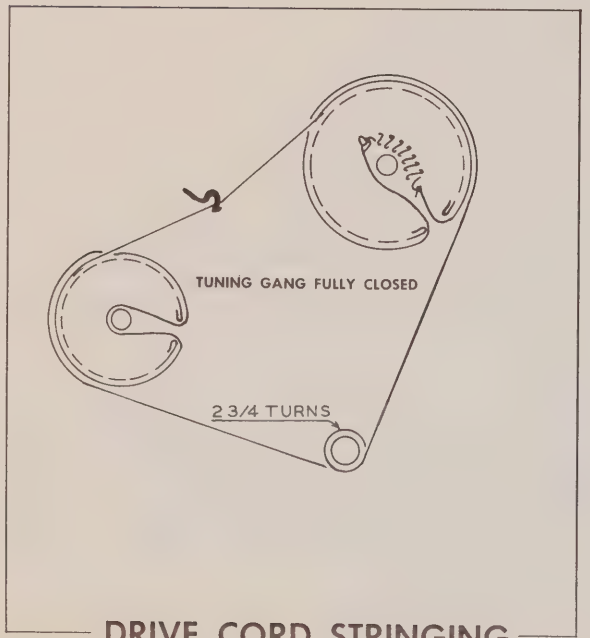
ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	Silvertone PART No.	JENSEN PART No.	QUAM PART No.	
SP1	4"	PM	3.5Ω	N24022	ST-113 Mod. P4-X	4A07	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	Silvertone PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Ant.	3.2Ω		N40660-2				Includes rear cover Assy.
L2	Osc. Coil	.7Ω	7Ω	N24020-1	14-1073		69-Osc.	
L3	Input IF	13Ω	13Ω	N40845-1	16-6758	BC-352	12-C1	
L4	Output IF	13Ω	13Ω	N40845-1	16-6758	BC-353	12-C2	

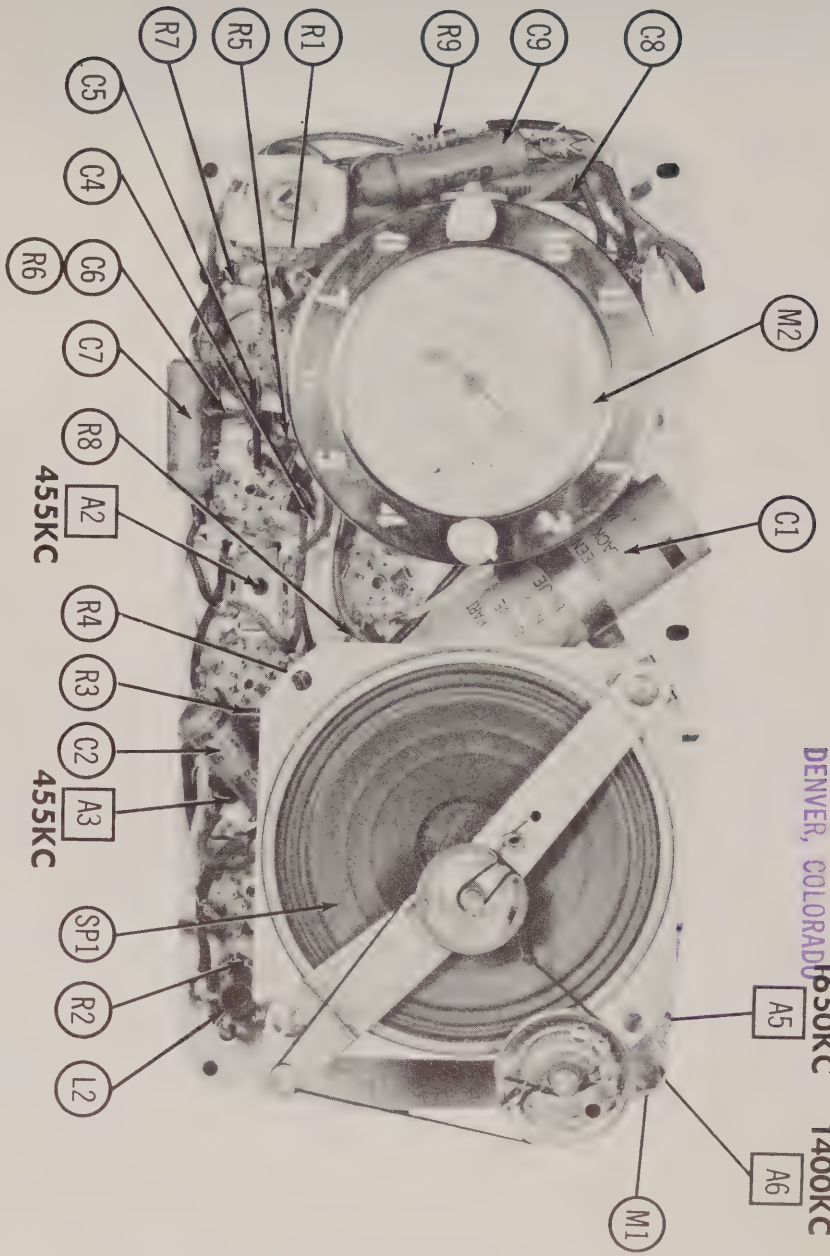
MISCELLANEOUS

ITEM No.	PART NAME	Silvertone PART No.	NOTES
M1	Tuning Cap.	N-24024-1	(29-405MMF) (22-150MMF)
M2	Clock	N-41179	
	Cabinet	N41347-1	3025 - black
	Cabinet	N41347-2	3026 - ivory
	Cabinet	N41347-3	3027 - red
	Knob	N41343	Volume & tuning
	Pointer	N24002-1	



DRIVE CORD STRINGING

CHASSIS—BOTTOM VIEW



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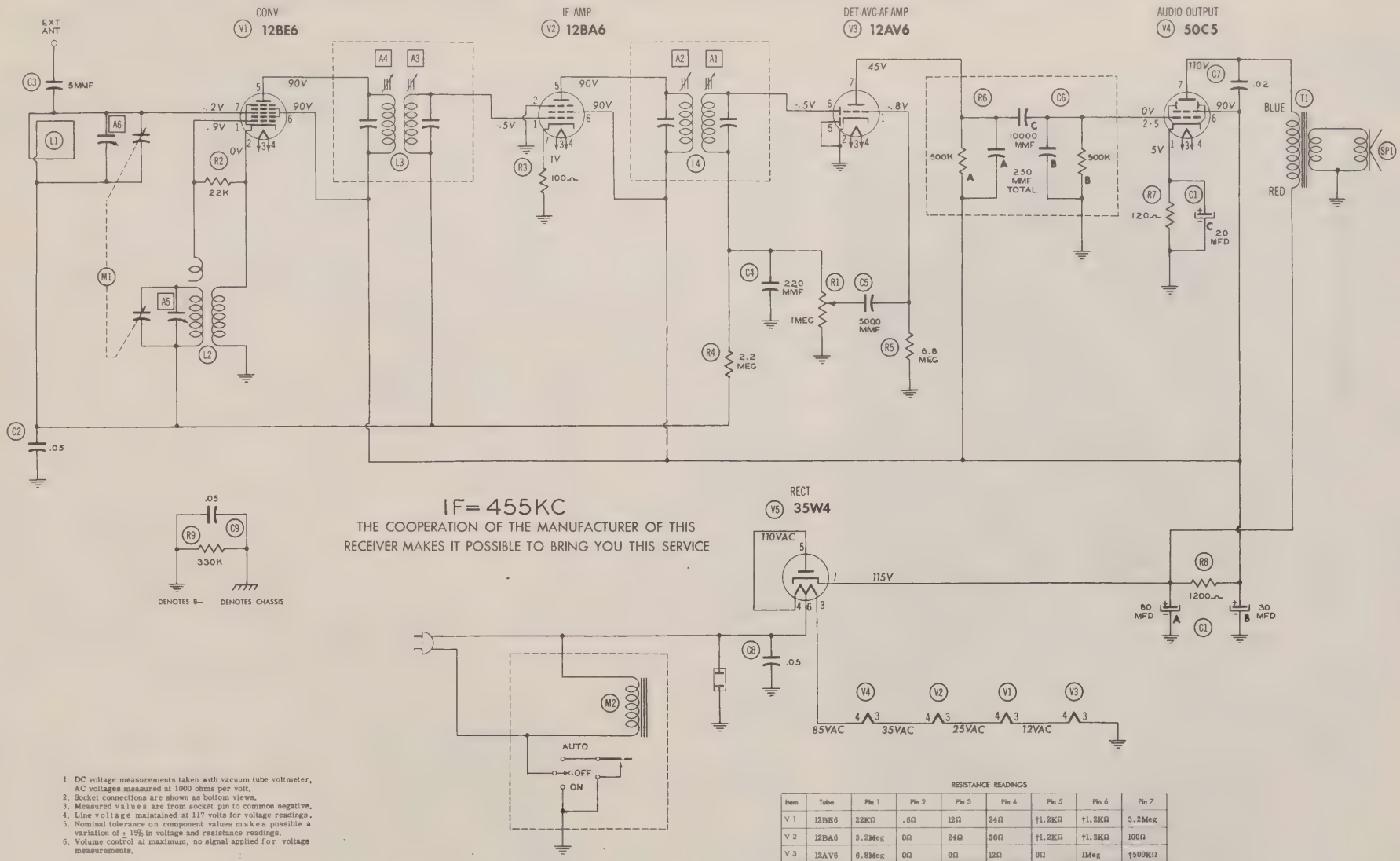
SILVERTONE
MODEL 3025 (Ch. 132.066)



1. DC voltage measurements taken with vacuum tube voltmeter, AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	.6Ω	12Ω	24Ω	†1.2KΩ	†1.2KΩ	3.2Meg
V 2	12BA6	3.2Meg	0Ω	24Ω	36Ω	†1.2KΩ	†1.2KΩ	100Ω
V 3	12AV6	6.8Meg	0Ω	0Ω	12Ω	0Ω	1Meg	†500KΩ
V 4	50C5	120Ω	500KΩ	36Ω	90Ω	500KΩ	†1.2KΩ	†185Ω
V 5	35W4	INF	INF	90Ω	120Ω	120Ω	115Ω	150KΩ

† MEASURED FROM PIN 7 OF V5

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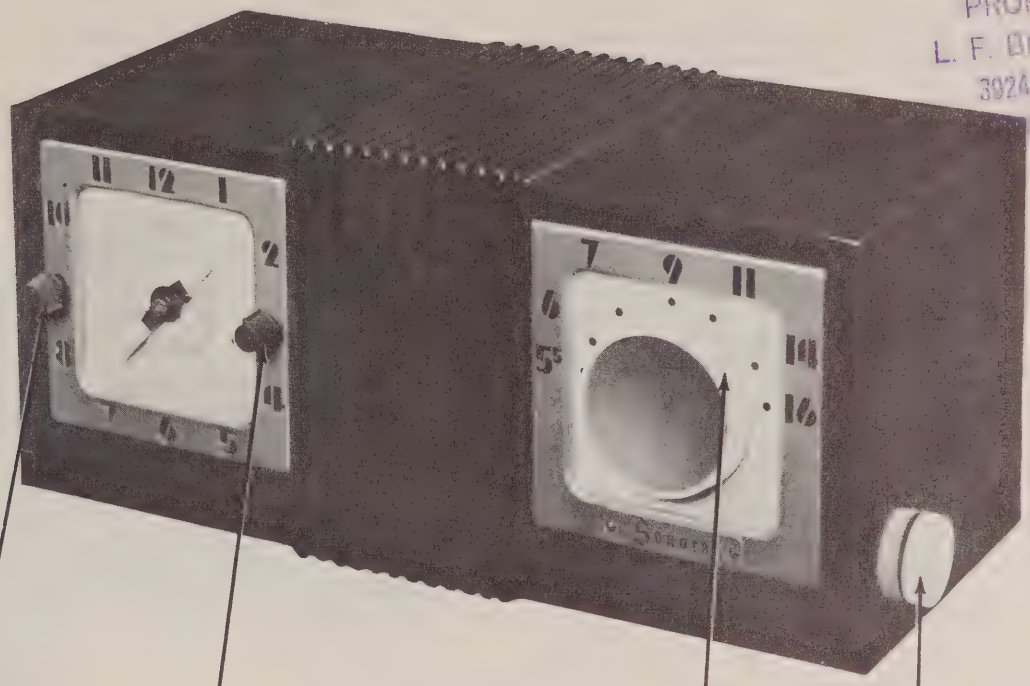
SONORA
MODELS 327A, 328A, 348A, 366A, 470A



SONORA
MODELS 327A, 328A, 348A, 366A, 470A

TRADE NAME	Sonora Models 327A, 328A, 348A, 366A, 470A
MANUFACTURER	Sonora Radio & Tel. Corp., 325 N. Hoyne Ave., Chicago, Ill.
TYPE SET	AC Operated AM Superheterodyne Receiver with Electric Clock
TUBES (Five)	Types 12SA7 Conv., 12SK7 IF Amp., 12SQ7 Det.-AVC-AF Amp., 50L6GT Audio Output 35Z5GT Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycles RATING .24 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial.
Use isolation transformer, if available. If not, connect a. a .1MFD capacitor in series with low side of signal generator and B-.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01MFD	High side to antenna stator lug on tuning gang. Low side to B-.	455KC (400~Mod)	Tuning gang fully open	Across voice coil	A1, A2 A3	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.		Loop	1620KC	"	"	A4	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1400KC	Tune to 1400KC signal	"	A5	"

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: SONORA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	Converter	12SA7	12SA7	8R	
V2	IF Amplifier	12SK7	12SK7	8N	
V3	Det.-AVC-AF Amp.	12SQ7	12SQ7	8Q	
V4	Audio Output	50L6GT	50L6GT	7S	
V5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SONORA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	50	150	N-7889	PRS150/50-30		BBRD-5315		TCD-497	TVA-2450	Blue Red
B	30	150								
C2	.05	200	N-1345	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C3	100		N-6015	SI100	D6-101	TP34	GP1K-101	UC-531	5GA-T1	
C4	.005	600	N-4894	P688-005	D6-502	CUB6D5	GP2-333-502	PT625	6TM-D5	
C5	250		N-6488	SI250	D6-251	TP40	GP2K-251	UC-5325	5GA-T25	
C6	.01	400	N-1344	P488-01	D6-103	CUB4S1	GP2-333-103	PT411	4TM-S1	
C7	.01	400	N-1344	P488-01	D6-103	CUB4S1	GP2-333-103	PT411	4TM-S1	
C8	.05	600	N-1346	P688-05	DF-503	CUB6S5		PT615	6TM-S5	
C9	.1	200	N-1351	P288-1	DF-104	PJ2P1		PT401	2TM-P1	
C10	.05	200	N-1345	P288-05	DF-503	PJ2S5		PT415	2TM-S5	

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SONORA PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500KΩ	½	N-7957P	*Q13-133	*A47-500K-Z	*BSK-60	*U-48	Volume - 50KΩ stop- Note 1
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A

Note 1. Some models may use an alternate control part #N-8250

* Connect a 50KΩ resistor in series with the right hand terminal of the control and the lead connecting to the terminal of the original control.

RESISTORS

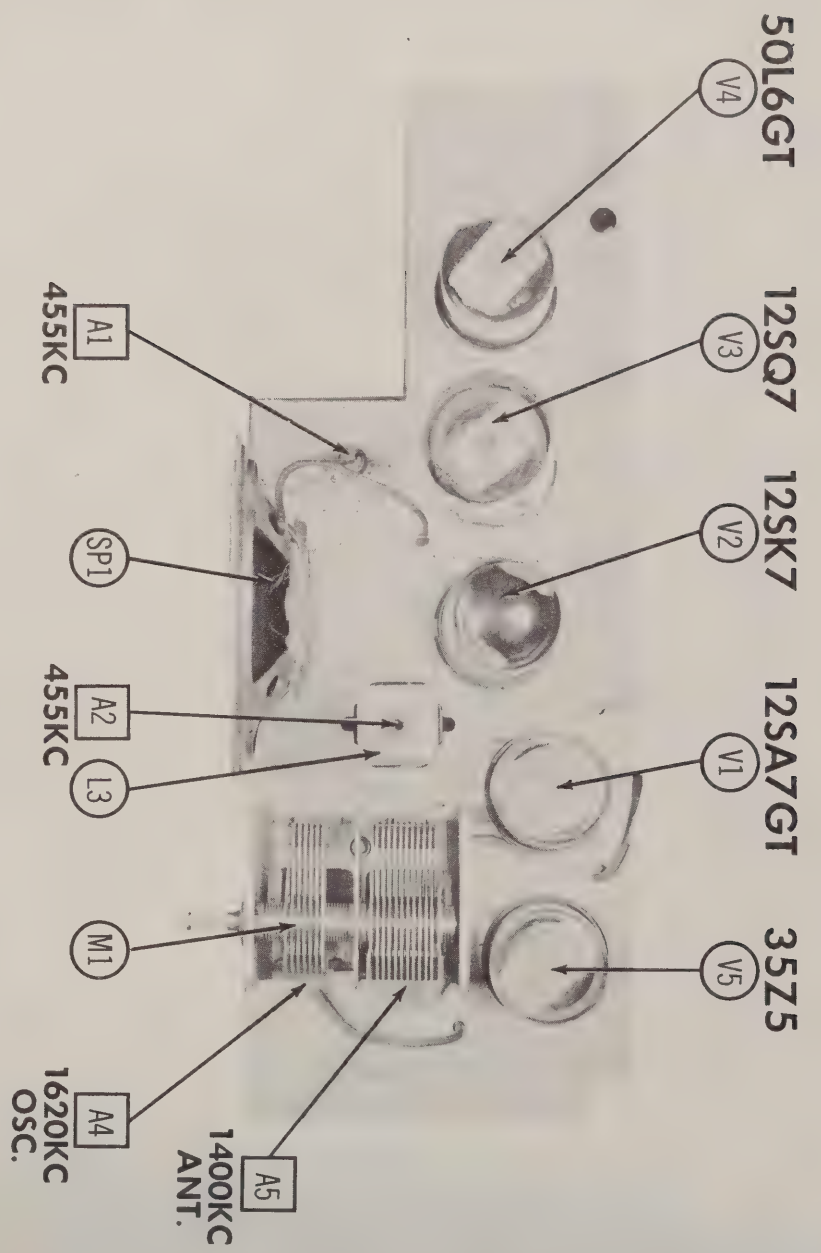
ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: SONORA PART No.	IRC PART No.	NOTES
R2	22KΩ	½	N-4025	BTS-22K	
R3	33Ω	½	N-4022	BTS-33	
R4	1Meg	½	N-1262	BTS-1Meg	
R5	47KΩ	½	N-4063	BTS-47K	
R6	6.8Meg	½	N-4028	BTS-6.8Meg	
R7	220KΩ	½	N-4026	BTS-220K	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: SONORA PART No.	IRC PART No.	NOTES
R8	470KΩ	½	N-4027	BTS-470K	
R9	180Ω	½	N-4067	BTS-180	
R10	1200Ω	1	N-4900	BTA-1200	
R11	33Ω	1	N-4068		
R12	220KΩ	½	N-4026	BTS-220K	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	IMPEDANCE: SEC.	REPLACEMENT DATA: SONORA PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	NOTES
T1	4.5KΩ	3.4Ω	N-7281		A-3026	S-6X			

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	SONORA PART No.	VIKING PART No.	QUAM PART No.	
SP1	3½"	PM	3.4Ω	N-8747	35J4	3A07	

COILS (RF-IF)

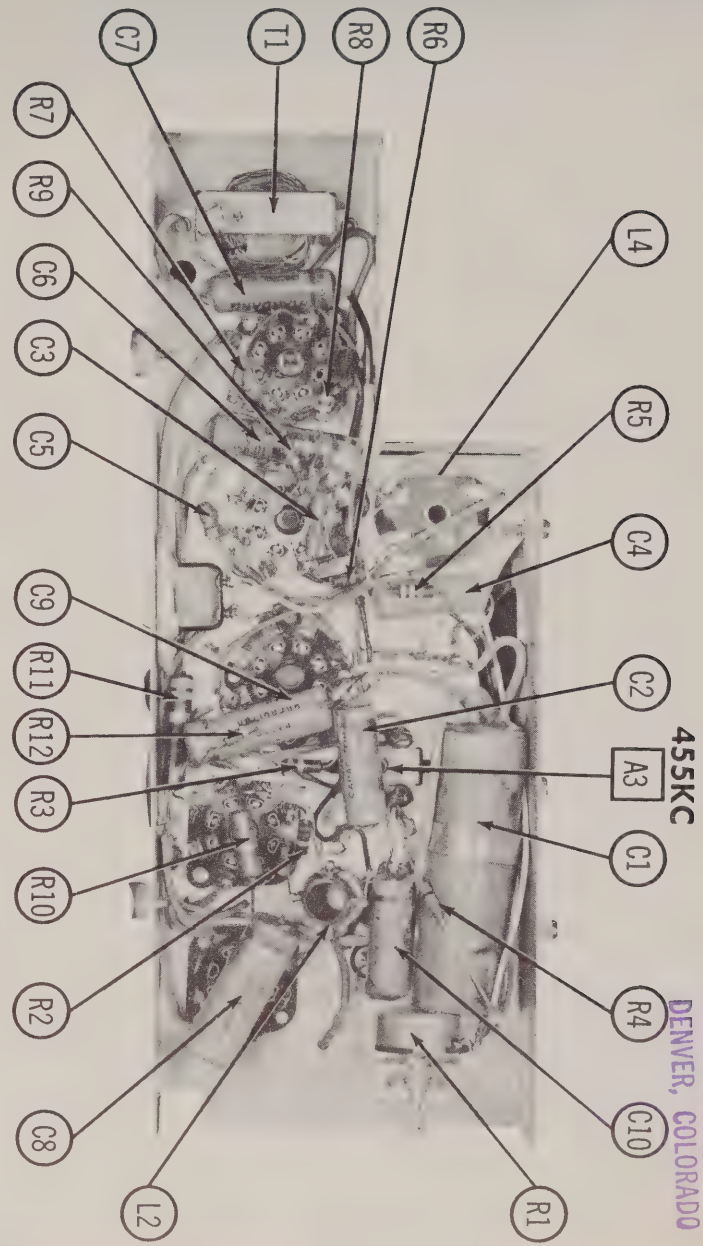
ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	SONORA PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Ant.	3.2Ω		N-8246				Includes cabinet back
L2	Osc. Coil	.6Ω	7.5Ω	N-7139	14-1073		69-Osc.†	
L3	Input IF	15Ω	15Ω	N-7981	16-6758	BC-352	12-C1	
L4	Output IF	22Ω	22Ω	N-7677	16-6758 *	BC-353 *	12-C2 *	

† Drill mounting hole.
* Cut out chassis hole and use clip mounting.

MISCELLANEOUS

ITEM No.	PART NAME	SONORA PART No.	NOTES
M1	Tuning gang	N-7141	18-397MMF each (2 sections)
M2	Clock		With switch

CHASSIS—BOTTOM VIEW



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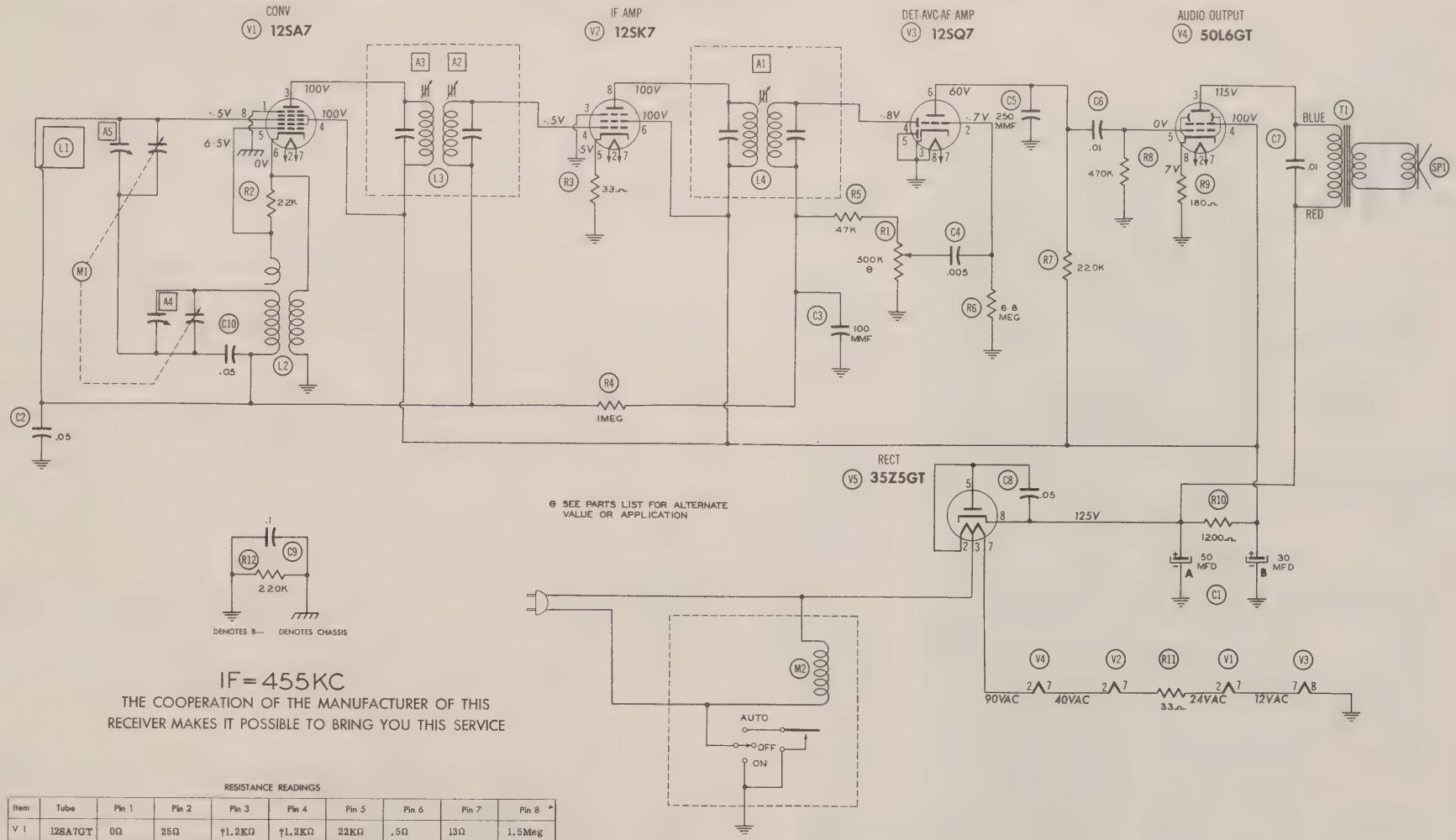

IF = 455KC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8 *
V 1	12SA7GT	0Ω	25Ω	†1.2KΩ	†1.2KΩ	22KΩ	.5Ω	13Ω	1.5Meg
V 2	12SK7GT	0Ω	73Ω	0Ω	1.5Meg	33Ω	†1.2KΩ	60Ω	†1.2KΩ
V 3	12SQ7GT	0Ω	6.8Meg	0Ω	550KΩ	0Ω	†220KΩ	13Ω	0Ω
V 4	50L6GT	.5Ω	120Ω	†260Ω	†1.2KΩ	470KΩ	†0Ω	73Ω	180Ω
V 5	35Z5GT	INF	155Ω	148Ω	INF	155Ω	INF	120Ω	150KΩ

† MEASURED FROM PIN 8 OF V5.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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SONORA
MODELS 464, 465, 466

SONORA
MODELS 464, 465, 466

TRADE NAME	Sonora Model 464, 465, 466
MANUFACTURER	Sonora Radio & Tel. Corp., 325 N. Hoyne Ave., Chicago, Ill.
TYPE SET	AC-DC Operated AM Superheterodyne Receiver
TUBES (Five)	Types 12SA7 Conv., 12SK7GT IF Amp., 12SQ7GT Det.-AVC-AF Amp., 50L6GT Audio Output 35Z5GT Rectifier
POWER SUPPLY	110-120 Volts AC-DC RATING .24 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial. Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to antenna stator lug on tuning gang. Low side to B-.	455KC (400~Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.		Loop	1620KC	"	"	A4	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1400KC	Tune to 1400KC signal	"	A5	"
4.		"	600KC	Tune to 600KC signal	"		Spread or compress slotted antenna rotor plates for maximum output. Repeat step 3.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		SONORA PART No.	STANDARD REPLACEMENT		
V1	Converter	12SA7	12SA7	8R	
V2	IF Amplifier	12SK7GT	12SK7GT	8N	
V3	Det.-AVC-AF Amp	12SQ7GT	12SQ7GT	8Q	
V4	Audio Output	50L6GT	50L6GT	7S	
V5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	SONORA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	50	150	N-7889	PRS150/50-30		BBRD5315		TCD497	TVA-2450	Blue Red
B	30	150								
C2	.05	200	N-1345	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C3	.05	200	N-1345	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C4	100		N-6015	SI100	D6-101	TP34	GP1K-101	UC-531	5GA-T1	
C5	100									Note 1
C6	.005	600	N-4894	P688-005	D6-502	CUB6D5	GP2-333-502	PT625	6TM-D5	
C7A	5000									
B	250		♦N-8215	♦PA-112-2	♦PC-71	♦112TM2	♦1406-02		♦T-4	
C										
C8	.01	400	N-1344	P488-01	D6-103	CUB4S1	GP2-333-103	PT411	4TM-S1	
C9	.05	400	N-1346	489ZX-05	DF-503	PJ4S5		PT415	4TM-S5	
C10	.05	200	N-1345	P288-05	DF-503	PJ2S5		PT415	2TM-S5	

♦ Items C7A, C7B, C7C, R6A and R6B are combined in one unit.
When replacing items separately, C7B, C7C should total 250MMF.
Note 1. Not used in all models.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	SONORA PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	N-7890	Q13-133	A47-500K-Z	BSK-60-S	U-48	Volume-50KΩ stop-Note
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWE-12	Not Req.	US-26	

Note . Connect a 50KΩ resistor in series with the right hand terminal of the control and the lead connecting to the original control.

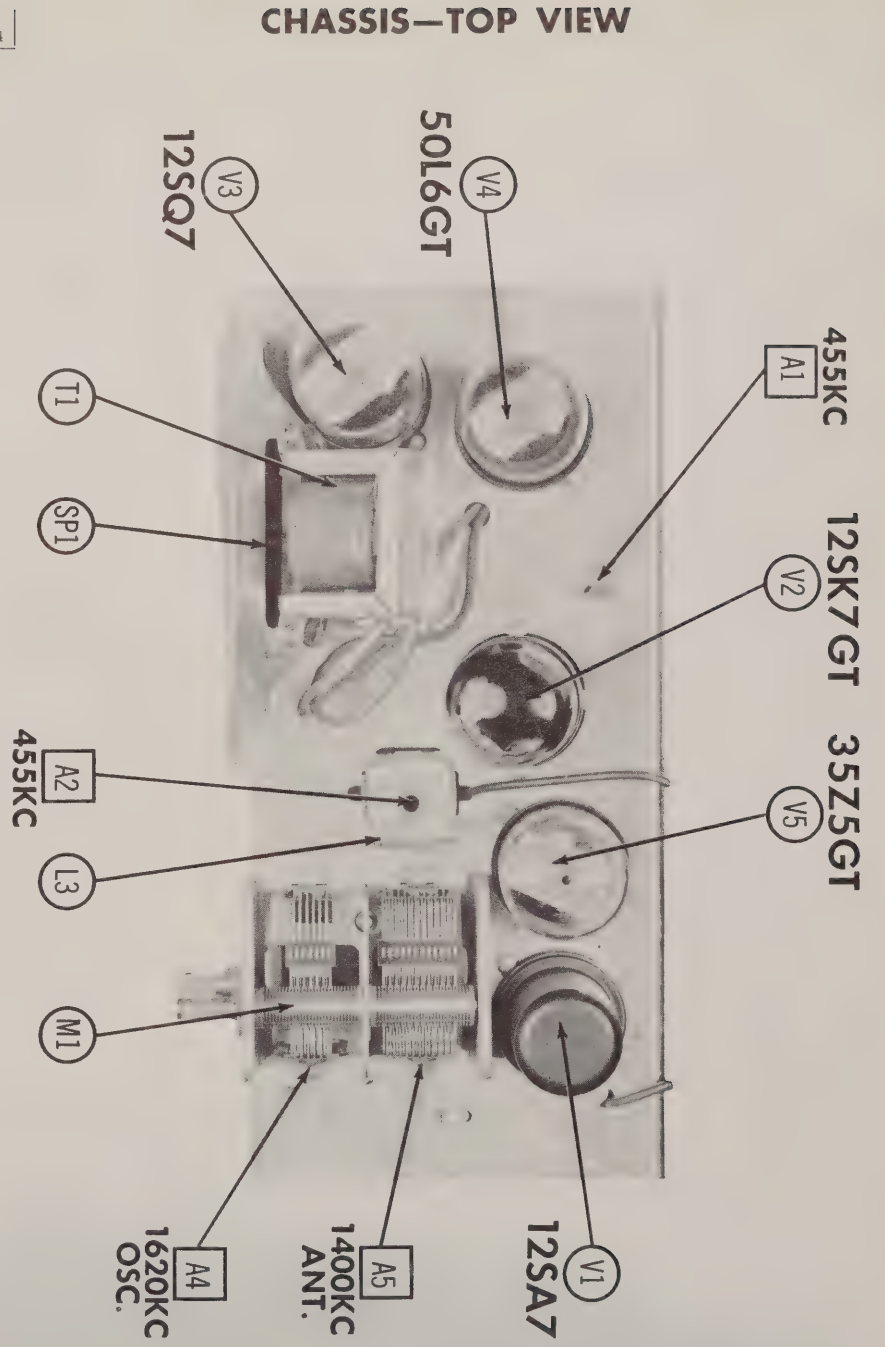
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	SONORA PART No.	IRC PART No.	
R2	22KΩ	½	N-4025	BTS-22K	
R3	1Meg	½	N-1262	BTS-1Meg	
R4	47KΩ	½	N-4063	BTS-47K	Note 1
R5	6.8Meg	½	N-4028	BTS-6.8Meg	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	SONORA PART No.	IRC PART No.	
R6A	250KΩ	½	♦N-8215	BTS-250K	
B	500KΩ	½			
R7	220Ω	½	N-4024	BTS-220	
R8	1000Ω	1		BTA-1000	Note 2
R9	220KΩ	1½	N-4026	BTS-220K	

♦ Items R6A, R6B, C7A, C7B, C7C are combined in one unit.
Note 1. Not used in all models.
Note 2. Some models may use a 1200Ω resistor in this application.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA: SONORA PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	NOTES
T1	2.74KΩ	3.5Ω	Part of Spkr.	A-3332	A-3025	S-12X	Z1101		

SPEAKER

ITEM No.	RATINGS SIZE	RATINGS FIELD	RATINGS V. C. IMP.	REPLACEMENT DATA: SONORA PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1	4"	PM	3.5Ω	N-7824	ST-113 Mod. P4-X	4A07	

COILS (RF-IF)

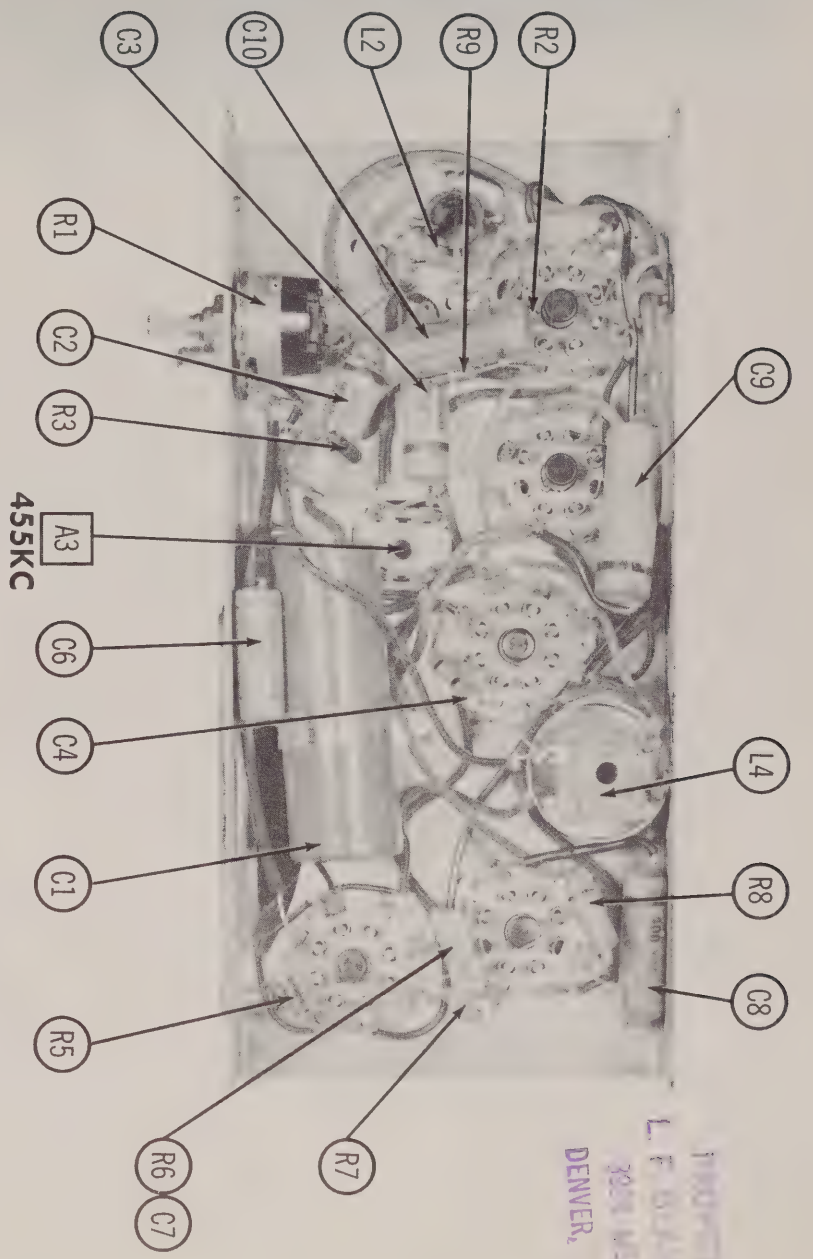
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: SONORA PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	Loop Ant.	3Ω		N-8138				Includes cabinet back
L2	Osc. Coil	.7Ω	7.3Ω	N-7139	14-1073		69-Osc.†	
L3	Input IF	14Ω	14Ω	N-7981	16-6758	BC-352	12-C1	
L4	Output IF	21Ω	21Ω	N-8150 *	16-6758 ♦	BC-353 ♦	12-C2 ♦	

* Alternate part #N-2542
† Drill mounting hole.
♦ Cut out chassis hole and use clip mounting.

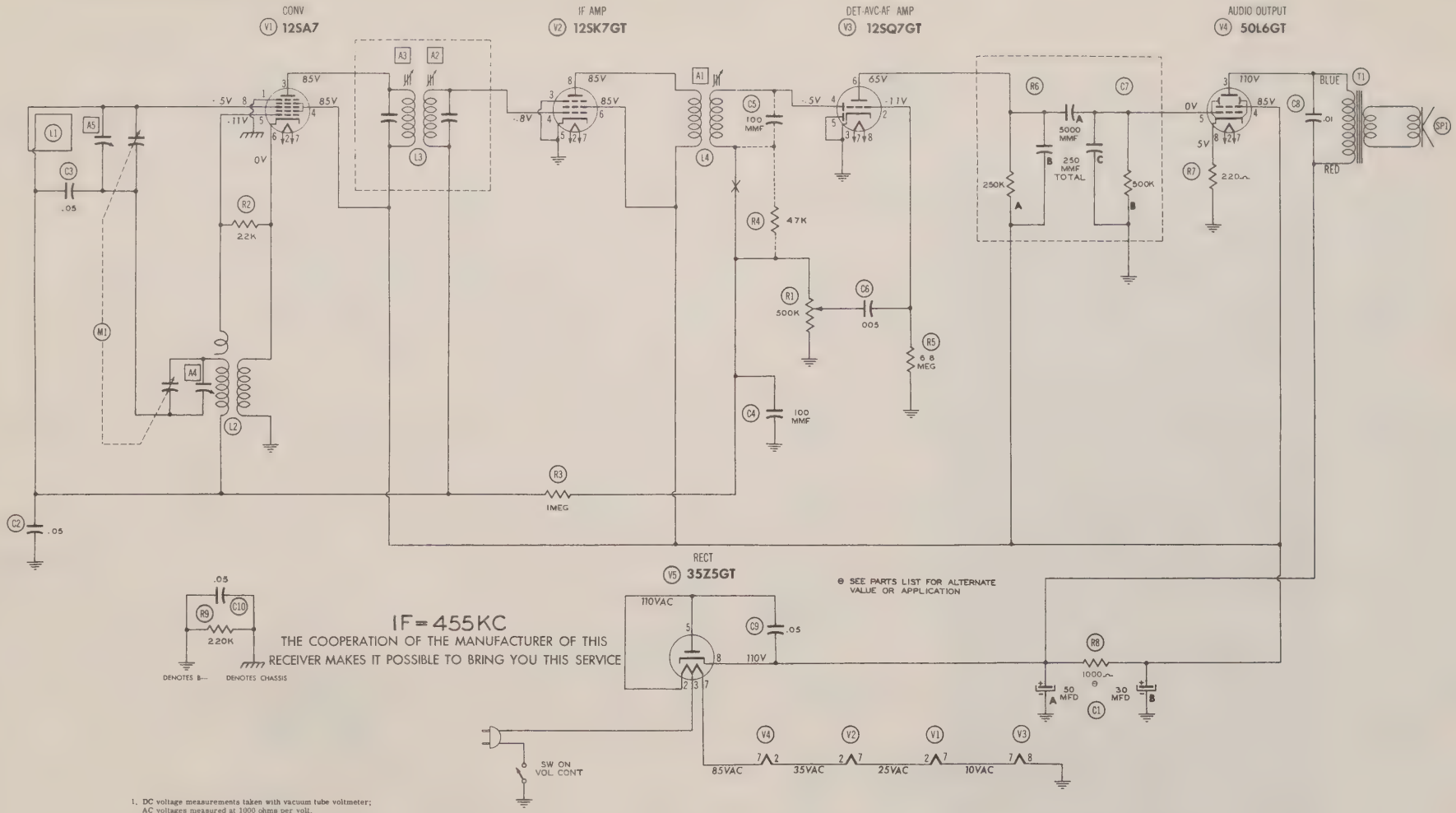
MISCELLANEOUS

ITEM No.	PART NAME	SONORA PART No.	NOTES
M1	Tuning Cap.	N-7141	(18-397MMF, 18-153MMF)

CHASSIS—BOTTOM VIEW



DENVER, COLORA



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SA7	0Ω	25Ω	†1KΩ	†1KΩ	22KΩ	.6Ω	12Ω	1.5Meg
V 2	12SK7	0Ω	37Ω	0Ω	1.5Meg	0Ω	†1K Ω	25Ω	†1KΩ
V 3	12SQ7	0Ω	6.8Meg	0Ω	500KΩ	0Ω	†250KΩ	12Ω	0Ω
V 4	50L6GT	INF	37Ω	†210Ω	†1KΩ	500KΩ	†0Ω	90Ω	220Ω
V 5	35Z5GT	INF	128Ω	120Ω	INF	128Ω	INF	90Ω	300KΩ

† MEASURED FROM PIN 8 OF V5

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3924 MEADE ST
DENVER, COLORADO

STEWART-WARNER MODELS
9175-B, BU, G, GU, H, HU

STEWART-WARNER MODELS
9175-B, BU, G, GU, H, HU

TRADE NAME	Stewart-Warner Models 9175-B, BU, G, GU, H, HU
MANUFACTURER	Stewart-Warner Electric, Div. of Stewart Warner Corp., 1300N. Kostner Ave., Chicago 15, Ill.
TYPE SET	Three Power Portable Superheterodyne Receiver
TUBES (Five)	Types 1U4 RF Amp., 1R5 Conv., 1U4 IF amp., 1U5 Det. -AVC-AF Amp., 3V4 Audio Output
POWER SUPPLY	110-120 Volts AC/DC (or) 9 Volts "A" Supply & 90 Volts "B" Supply in pack form
RATING	.12 Amp. @ 117 Volts AC (or) 55MA @ 9 Volts DC & 19MA @ 90 Volts DC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

With tuning gang fully closed set dial pointer opposite the dot adjacent to the larger 5 of "55" on the dial scale. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Use battery power, if possible. If AC power is used, use an isolation transformer when available. If not, connect a .1MFD capacitor in series with low side of the signal generator and B-.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05MFD	High side to stator lug of middle section of tuning gang. Low side to B-.	455KC (400~ Mod)	Tuning gang fully open.	Across voice coil	A1, A2 A3, A4	Adjust for maximum output. If AC power is used without an isolation transformer, reduce dummy antenna to 200MMF to reduce hum modulation.
2.		Loop	1600KC	1600KC	Across voice coil	A5	Reassemble dial scale and dial plate on chassis. Batteries should be in proper place even though chassis is not in cabinet. Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1500KC	Tune to 1500KC signal	"	A6, A7	Adjust for maximum output

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PARTS LIST AND DESCRIPTIONS

STEWART-WARNER MODEL 9175-B

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: Stewart-Warner PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	RF Amplifier	1U4	1U4	6AR	
V2	Converter	1R5	1R5	7AT	
V3	IF Amplifier	1U4	1U4	6AR	
V4	Det-AVC-AF Amp.	1U5	1U5	6BW	
V5	Output	3V4	3V4	6BX	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA: Stewart-Warner PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	▲ 100	150	521484	AFHS3-196					R1363	
B	■ 80	150								
C	▲ 200	10								
C2	.05	400	512214	P488-05	DF-503	CUB4S5		PT415	4TM-S5	
C3	10000		513022	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C4	100		513003	S1100	D6-101	TP34	GP1K-101	UC-531	5GA-T1	
C5	10		513023	S110	D6-100	TP09	GP1K-100	UC-541	5GA-Q1	
C6	.05	400	512214	P488-05	DF-503	CUB4S5		PT415	4TM-S5	
C7	47		513002	S147	D6-470	TP29	GP1K-470	UC-5447	5GA-Q47	
C8	10000		513022	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C9	10000		513022	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C10	.05	400	512214	P488-05	DF-503	CUB4S5		PT415	4TM-S5	
C11	.05	400	512214	P488-05	DF-503	CUB4S5		PT415	4TM-S5	
C12A	150					TP36	GP1K-151	UC-5315		
B	2000					K072	801-002	DC-522		
C	150		♦ 521305	♦ PA-262	♦ PC-165	TP36	GP1K-151	UC-5315	♦ DP-1	
D	10000					K082	811-01	DC-511		
E	5000					K080	801-005	DC-525		
C13	1000		513034	BPD-001	DD-102	K069	801-002	DC-521	5HK-D1	
C14	.05	400	512214	489ZX-05	DF-503	PJ4S5		PT415	47M-S5	
C15	.05	400	512214	P488-05	DF-503	CUB4S5		PT415	47M-S5	

♦ Items C12A, C12B, C12C, C12D, C12E, R9A, R9B, R9C and R9D are combined in one unit.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Stewart-Warner PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1 Meg	½	521234		A47-1Meg-Z	BSK-70-S	U-53	Volume
B	Shaft		Not Req.		KSS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.		SWE-20	Not Req.	US-27	Attach to R1A

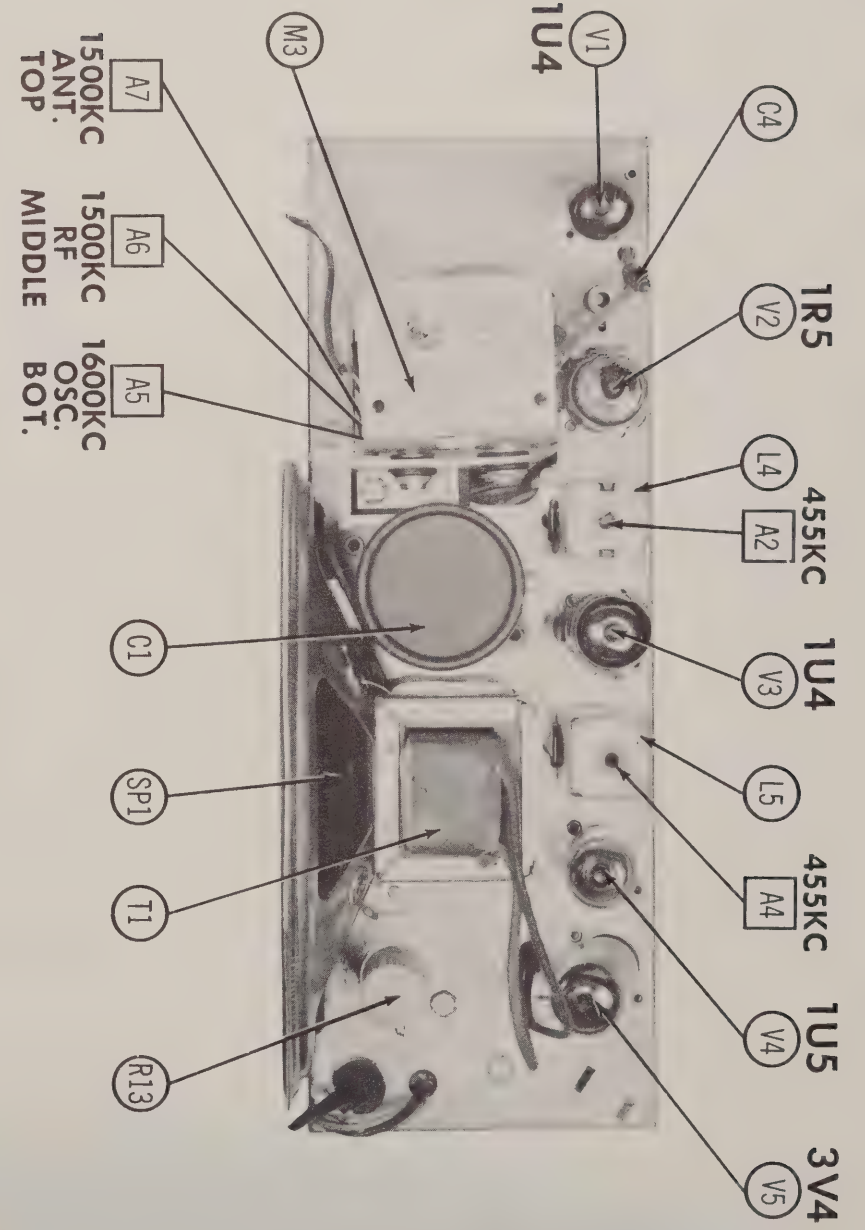
RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: Stewart-Warner PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R2	3.3 Meg	½	510194	BTS-3.3Meg	
R3	2.2 Meg	½	510193	BTS-2.2Meg	
R4	100KΩ	½	510172	BTS-100K	
R5	33KΩ	½	510163	BTS-33K	Note 1
R6	10 Meg	½	510197	BTS-10 Meg	
R7	2.2 Meg	½	510193	BTS-2.2Meg	
R8	5.6Meg	½	510786	BTS-5.6Meg	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: Stewart-Warner PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R9A	10 Meg	½	♦ 521305	BTS-10 Meg	
B	4.7Meg	½		BTS-4.7Meg	
C	1 Meg	½		BTS-1 Meg	
D	3.3 Meg	½		BTS-3.3Meg	
R10	470Ω	½	510130	BTS-470	
R11	220Ω	½	510124	BTS-220	
R12	820Ω	½	510135	BTS-820	
R13A	150Ω	3	521210		
B	2000Ω	7			

Note 1. Some models may use a 3300Ω resistor in this application.
♦ Items R9A, R9B, R9C, R9D, C 12A, C12C, C12D, C12E are combined in one unit.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA Stewart-Warner PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	NOTES
T1	9.8KΩ	3.1Ω	522172	A-3329 ①	A-2932 ①	S-51X ①	Z1116 ①	24S60 ①	① Bend mounting tabs down, File out slots. Mount on original mounting bracket.

SPEAKER

ITEM No.	RATINGS SIZE	RATINGS FIELD	RATINGS V. C. IMP.	REPLACEMENT DATA Stewart-Warner PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1	4"x6"	PM	3.1Ω	521488	46J6	46A1	Cut corners for mounting.

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA Stewart-Warner PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	Ant. Coil	.5Ω		521497				
L2	RF Coil	85Ω	7.5Ω	521495	14-1072	BC-382	A-5495-RF*	
L3	Osc. Coil	1.4Ω	7.5Ω	521472	14-1074	BC-381	71-Osc.	
L4	Input IF	17Ω	17Ω	509433	16-6758	BC-352	12-C1	
L5	Output IF	42Ω	42Ω	521319	16-6758	BC-353	12-C2	

* Enlarge mounting hole.

SELENIUM RECTIFIER

ITEM No.	RATING CURRENT	REPLACEMENT DATA Stewart-Warner PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	SARKES TARZIAN PART No.	SELETRON PART No.	NOTES
M1	.045A	521485	1263A	RS-65Q	6S65	65	8J1	

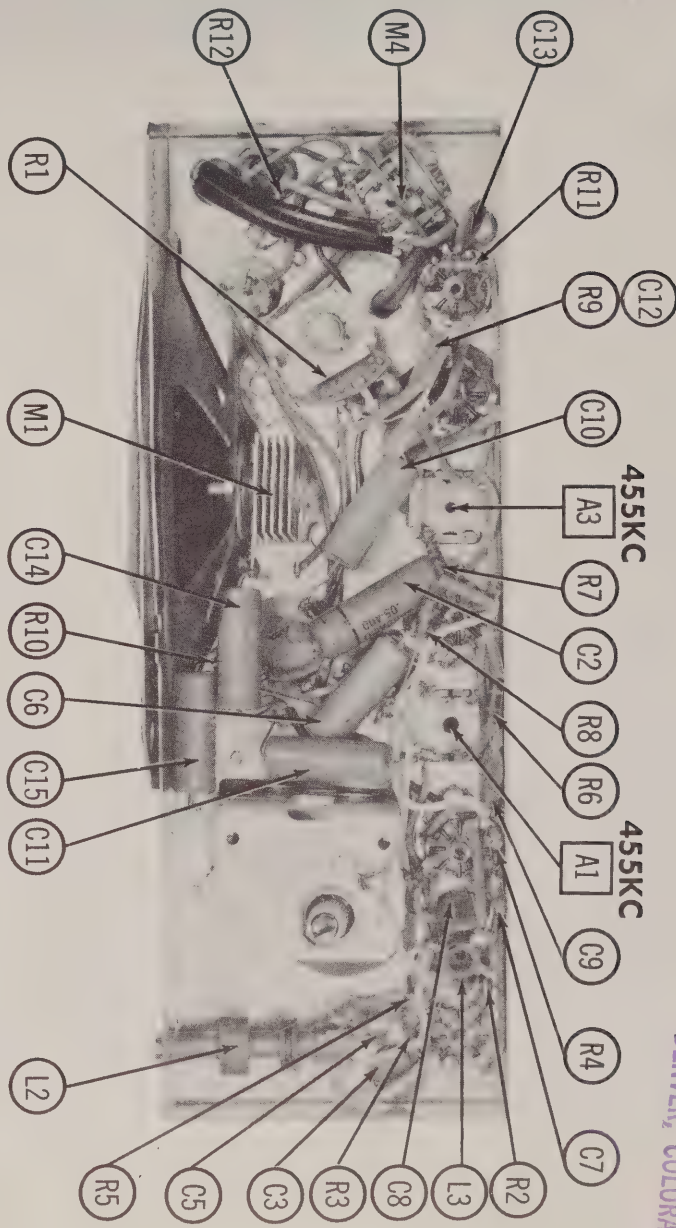
BATTERIES

ITEM No.	VOLTAGE	Stewart-Warner PART No.	REPLACEMENT DATA EVEREADY "A"	EVEREADY "B"	EVEREADY "A-B"	BURGESS "A"	BURGESS "B"	BURGESS "A-B"	INSTALLATION NOTES
M2	9V "A" / 90V "B"				756			T6Z60	

MISCELLANEOUS

ITEM No.	PART NAME	Stewart-Warner PART No.	NOTES
M3	Tuning cap	521387	(34-395MMF, 28-395MMF, 21-140MMF)
M4	Switch	521293	Power changeover
	Cabinet	521682	Back section-green
	Cabinet	521684	Back section-brown
	Cabinet	521686	Back section-black
	Cabinet	521681	Front section-green
	Cabinet	521683	Front section-brown
	Cabinet	521685	Front section-black
	Knob	521351	Volume
	Knob	521317	Tuning

CHASSIS—BOTTOM VIEW



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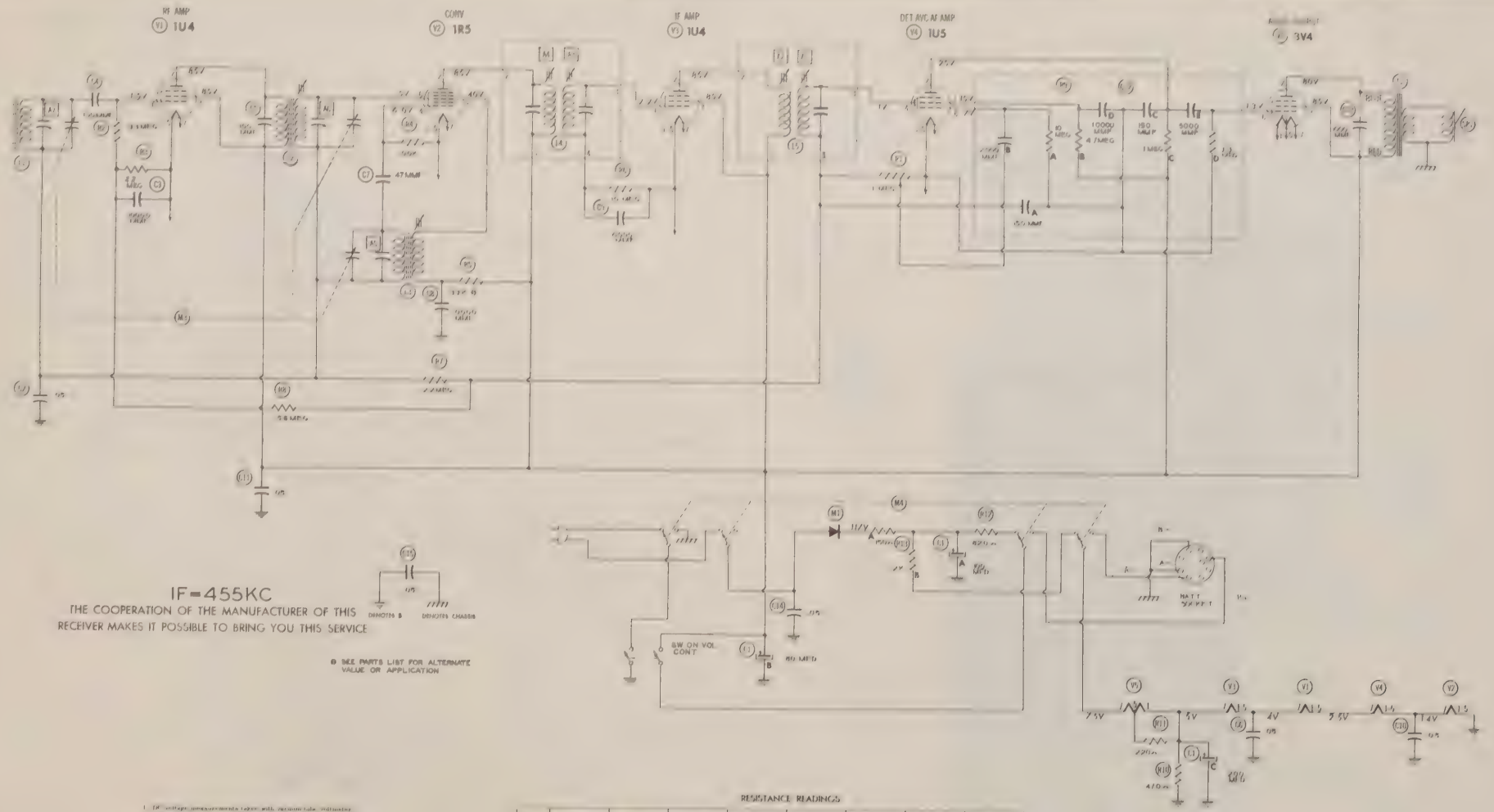
STEWART-WARNER
MODEL 9175-B



IF=455KC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

DENOTES B

DENOTES CHASSIS

Ⓑ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

1. DC voltage measurements taken with electronic voltmeter.
2. AC voltages measured at 1000 ohms per volt.
3. Socket connections as viewed from bottom.
4. Measured values are from socket pin to common negative.
5. Line voltage adjusted to 117 volts for voltage readings. Receiver operated from transformer power supply. Antenna shorted to ground. 1500 kc voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1U4	*	† 1KΩ	† 970Ω	1. 7 Meg	*	5 Meg	*
V 2	1R5	0Ω	† 990Ω	† 34KΩ	100KΩ	0Ω	3. 2Meg	*
V 3	1U4	*	† 1KΩ	† 970Ω	3. 2 Meg	*	10 Meg	*
V 4	1U5	*	† 1 Meg	† 4. 7Meg	1 Meg	INF	10 Meg	*
V 5	3V4	*	† 1. 5KΩ	† 970Ω	INF	*	3. 3 Meg	*

* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE
† MEASURED FROM OUTPUT OF M1.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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RETMA MEMBER

TRUETONE MODELS 2D1415A, 2D1416A, 2D1426A, 2D2313C, 2D2414A, 2D2415A, 2D2422A, B (Ch. 17T4, 17T5, 17T8, 21T14, A, 21T16, A)

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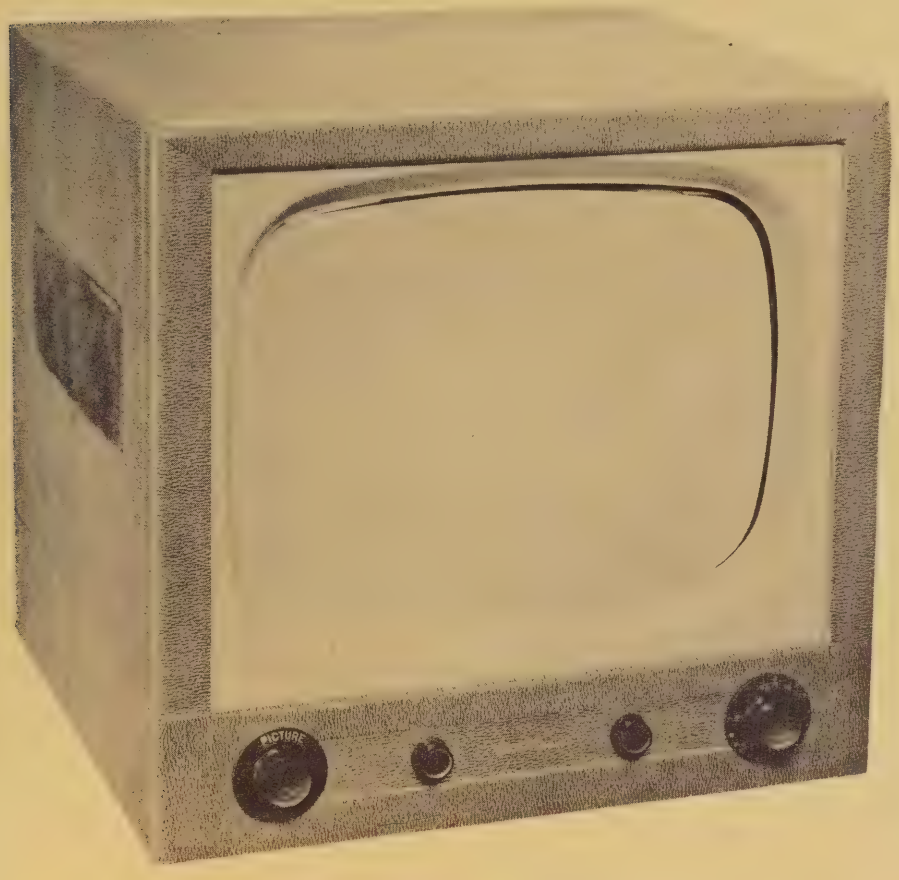

MODEL 2D2313C

TRUETONE MODELS 2D1415A, 2D1416A, 2D1426A, 2D2313C, 2D2414A, 2D2415A, 2D2422A, B (Ch. 17T4, 17T5, 17T8, 21T14, A, 21T16, A)

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*TRADE MARK

RETMA MEMBER

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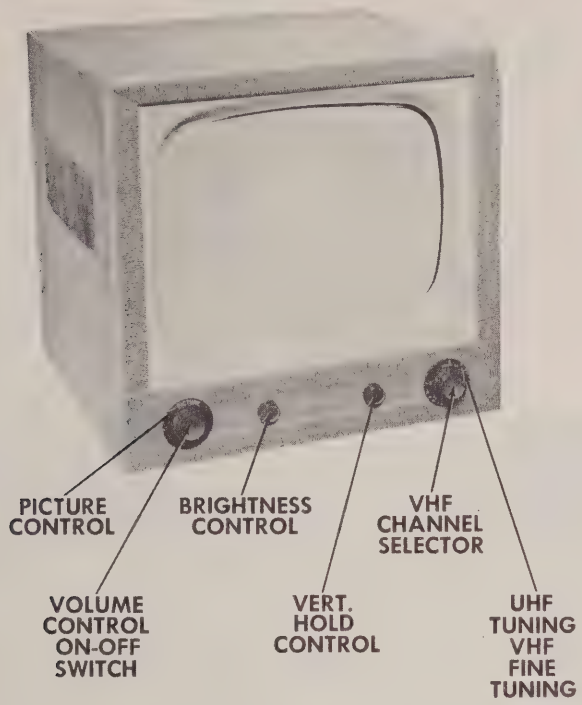

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TRUETONE MODEL 2D2313C

TRADE NAME	Truetone	MODELS	CHASSIS
		2D1415A	21T16
		2D1416A, 2D1426A	21T16A
		2D2313C	17T5
		2D2414A	21T14
		2D2415A	21T14A
		2D2422A	17T8
		2D2422B	17T4
SUPPLIER	Western Auto Supply Co., 2107 Grand Ave., Kansas City, Mo.		
TYPE SET	Television Receiver		
TUBES	Twenty		
POWER SUPPLY	105-115 Volts AC-60 Cycles	RATING 1.6 Amp. @ 115 Volts AC	
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 26.75MC, Sound IF 22.25MC (Intercarrier)		

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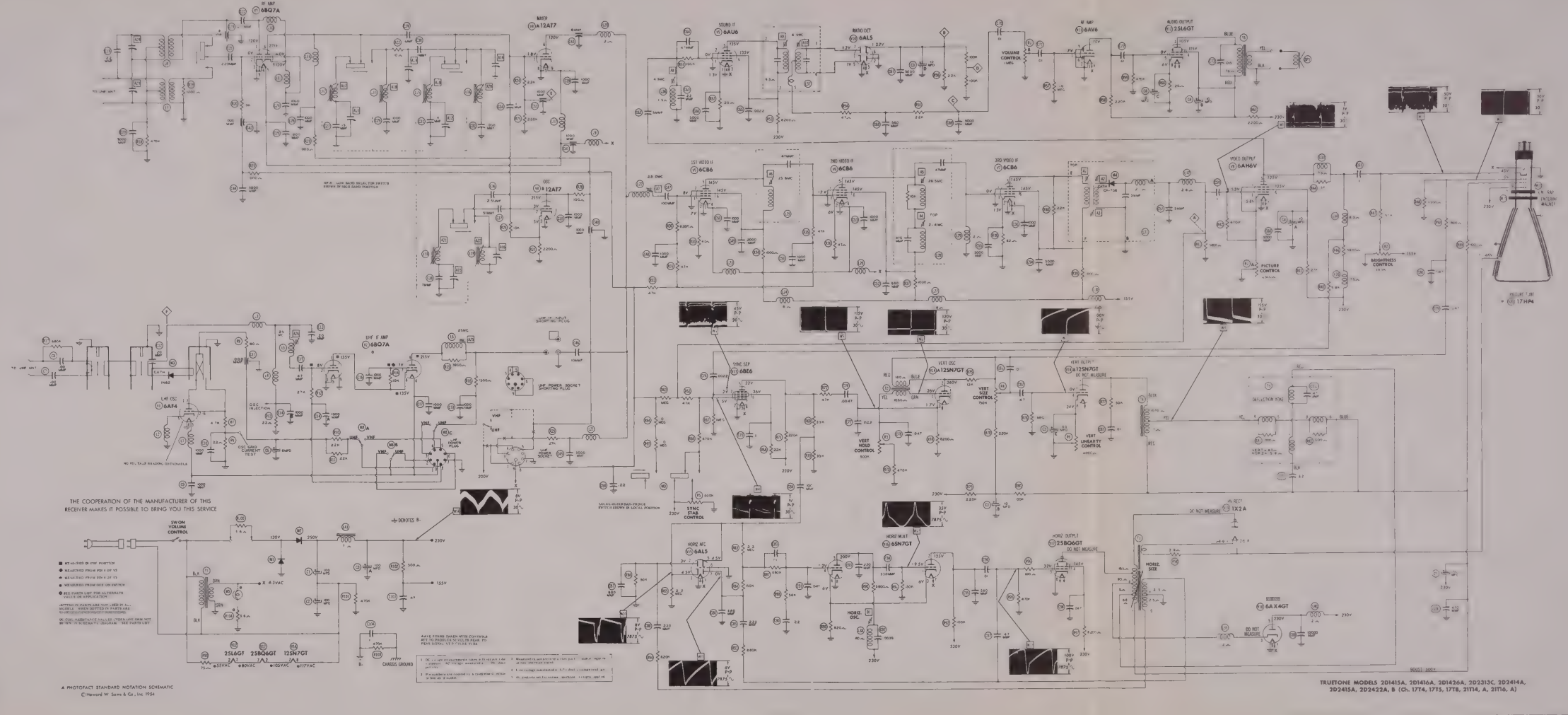
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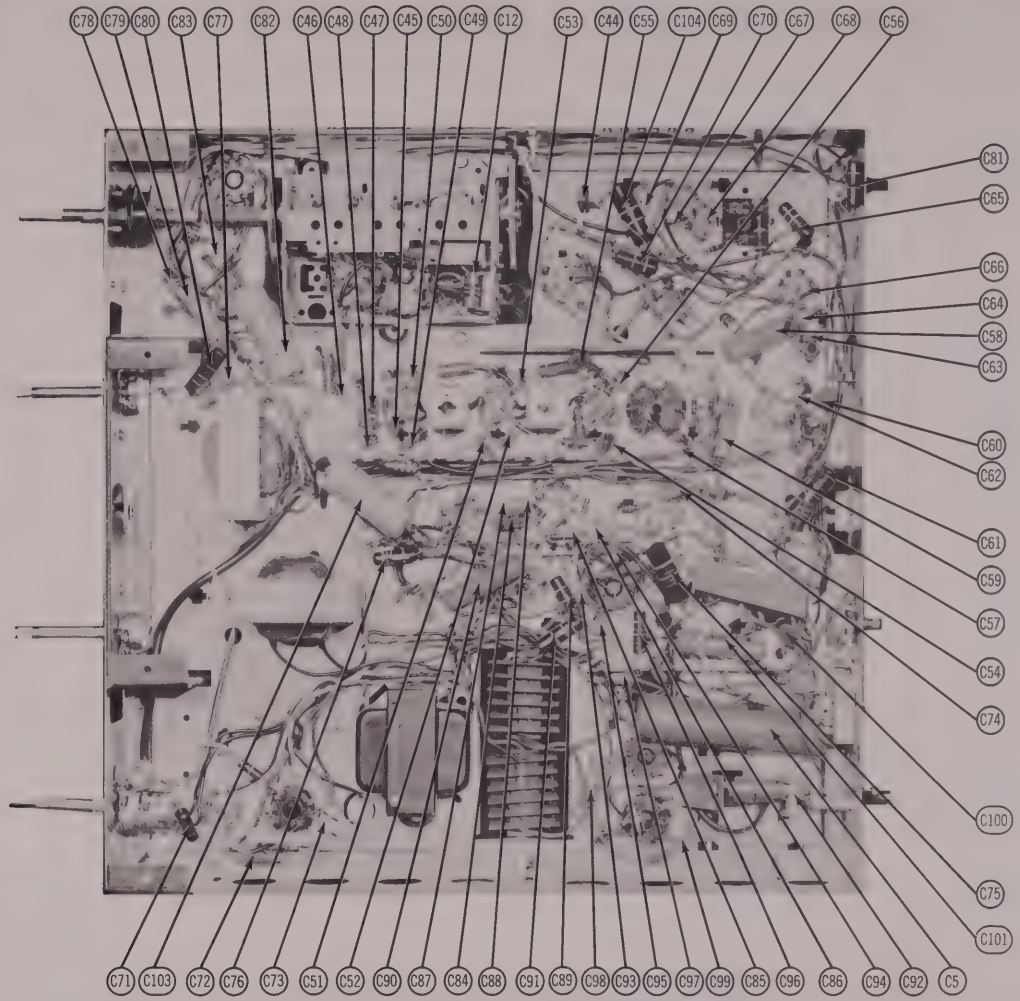
CHASSIS TOP VIEW

TRUETONE MODELS 2D1415A, 2D1416A, 2D1426A, 2D2313C, 2D2414A, 2D2415A, 2D2422A, B (Ch. 17T4, 17T5, 17T8, 21T14, A, 21T16, A)



CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

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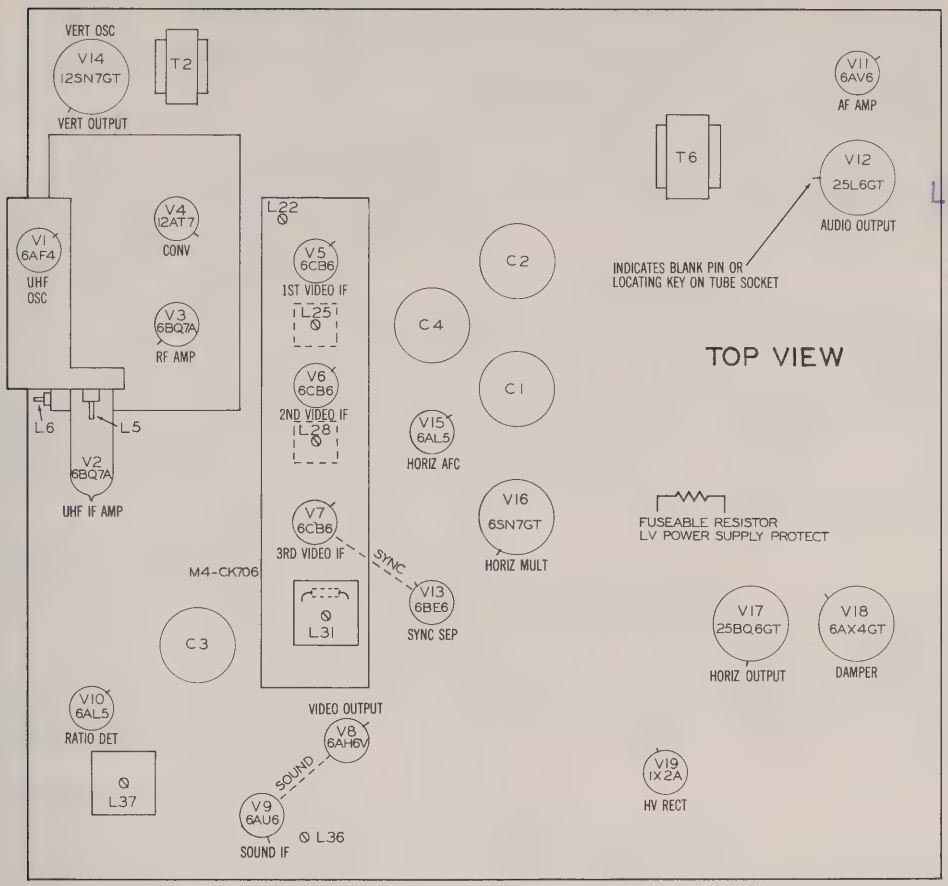
TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

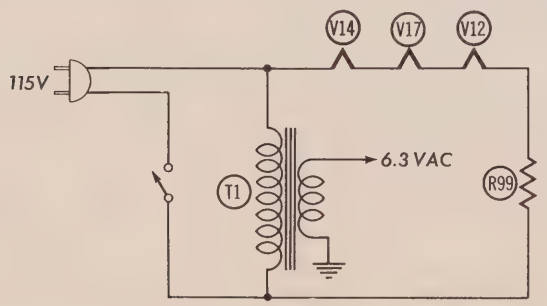
POWER SUPPLY FAILURE
No raster, no sound - **Selenium Rectifiers (M1 & M2)**

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - **V4, V5, V6, V7, V8**
No pic, no sound, has snow - **V3, V4, V5**
No pic, has sound, has raster - **V8, V20**
Has pic, no sound - **V9, V10, V11, V12**

SYNC FAILURE
No vert. sync - **V13, V14**
No horiz. sync - **V13, V15, V16**
No vert. or horiz. sync - **V13**

SWEEP FAILURE
No raster, has sound - **V16, V17, V18, V19, V20**
No vertical deflection - **V14**
Poor vert. linearity or foldover - **V14**
Poor horiz. linearity or foldover - **V16, V17, V18**
Narrow picture - **V16, V17, V18, V19, M1, M2**
Vert. off freq. - **V13, V14**
Horiz. off freq. - **V13, V15, V16**

NOTE: Since this receiver employs tubes used in series-parallel filament network, an open filament in any tube in series may cause the set to be inoperative. (See circuit below).



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ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use an isolation transformer to protect the test equipment.
The high voltage lead should be securely taped and kept away from the chassis.

VIDEO IF ALIGNMENT

Set the " fringe surburban local switch to "fringe" position.
Connect a .001 MFD capacitor across the vertical input terminals of oscilloscope.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.001MFD	High side to pin 1 (grid) of 6CB6 (V7). Low side to chassis top plate.	25MC (10MC Swp)	23.5MC 26.2MC	13	Vert. amp. thru 10KΩ to point Ⓐ. Low side to chassis top plate.	A1, A2, A3	Short pin 5 (plate) to pin 6 (screen) of 6CB6 (V6). Attenuate sweep generator output for 1 volt peak to peak on scope. Adjust A1, A2 and A3 for response similar to Fig. 1. A3 is coupling rod adjustment (small wire at bottom of coil). Remove short from pins 5 and 6 of V6.
2.	"	High side to pin 7 (grid) of 12AT7 (V4). Low side to tuner chassis. Use very short leads.	Not used	21.4MC	"	Use VTVM. DC probe to point Ⓐ. Common to chassis top plate.	A4	Attenuate generator output to maintain 2 volts on VTVM. Adjust for maximum deflection.
3.	"	"	"	26.5MC	"	"	A5	Adjust for maximum deflection. Repeat step 2.
4.	"	"	"	23.8MC	"	"	A6	Attenuate generator output to maintain 2 volts on VTVM. Adjust for maximum deflection.
5.	"	"	"	25.0MC	"	"	A7	"
6.	"	"	25MC (10MC Swp)	23.5MC 25.5MC	"	Vert. amp thru 10KΩ to point Ⓐ. Low side to chassis top plate.		Check for response similar to Fig. 2. A1 may be readjusted for flat topped response, but if response is not similar to Fig. 2 steps 1 thru 6 should be repeated.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (±1%) resistors in series from point Ⓑ to chassis. The junction of these two resistors is alignment point Ⓓ as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
7.	.001MFD	High side to point Ⓐ. Low side to chassis top plate.	4.5MC (Unmod)	Any non-interfering channel	DC probe to point Ⓑ. Common to chassis top plate.	A8, A9	Adjust for maximum deflection final adjustment of A8 should be made with a TV station tuned in. Adjust A8 until the horizontal scanning lines are smooth and continuous.
8.	"	"	"	"	DC probe to point Ⓒ. Common to point Ⓓ.	A10	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	.001MFD	High side to point Ⓐ. Low side to chassis top plate.	4.5MC (450KC Swp)	4.5MC	Any non-interfering channel	Vert. amp. to point Ⓑ. Common to chassis top plate.	A8, A9	Disconnect stabilizing capacitor C3D. Adjust for curve of maximum amplitude and symmetry similar to Fig. 3. Final adjustment of A8 should be made with a TV station tuned. Adjust A8 until the horizontal scanning lines are smooth and continuous.
8.	"	"	"	"	"	Vert. amp. to point Ⓒ. Low side to chassis top plate.	A10	Reconnect stabilizing capacitor C3D. Adjust so that 4.5MC occurs at center of crossover lines as in Fig. 4. SLIGHTLY retouch A9 for maximum amplitude and straightness of crossover lines.

VHF TUNER ALIGNMENT

Pre-set trimmers A11 through A16 as shown in Fig. 5.
Pre-set coil cores A17 through A22 as follows:
(a) Tuner should be turned to top of its stroke in low band position (cores furthest out of coil form)
(b) Adjust cores so that bottom of cores are 1.6 inches from ends of coil forms.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

LOW BAND RF ALIGNMENT

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	Fig. 6	Thru Fig. 6 to VHF antenna terminals.	85MC (10MC Swp)	83.25MC 87.75MC	6	Vert. amp. thru 10KΩ to point Ⓔ. Low side to tuner chassis.	A23, A13, A14	Adjust for maximum response similar to Fig. 7 with markers above 90%.
10.	"	"	79MC (10MC Swp)	77.25MC 81.75MC	5	"		If markers fall below 70% on any low band channel make compromise adjustments of A23, A13, and A14 with channel switch set to that channel then check all other low band channels to see that they have not been seriously affected.
			69MC (10MC Swp)	67.25MC 71.75MC	4			
			63MC (10MC Swp)	61.25MC 65.75MC	3			
			57MC (10MC Swp)	55.25MC 59.75MC	2			

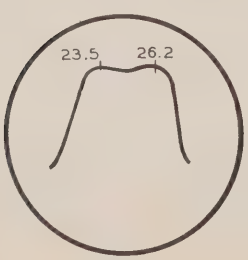

FIG.1

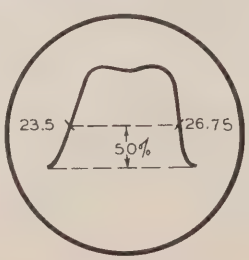

FIG. 2

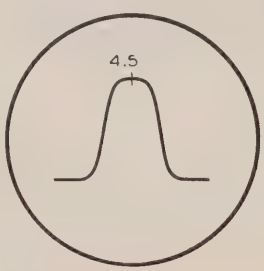

FIG.3

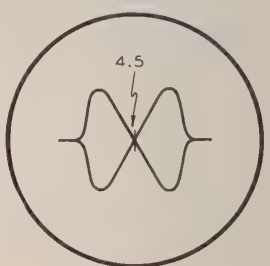

FIG.4

ALIGNMENT INSTRUCTIONS (cont)

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HIGH BAND RF ALIGNMENT

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11.	Fig. 6	Thru Fig. 6 to VHF antenna terminals	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. amp. thru 10KΩ to point (E). Low side to tuner chassis.	A24, A11 A12	Adjust for maximum response similar to Fig. 7 with markers above 90%.
12.	"	"	207MC (10MC Swp)	205.25MC 209.75MC	12	"		If markers fall below 70% on any high band channel make compromise adjustments of A24, A11 and A12 with channel switch set to that channel then check all other high band channels to see that they have not been seriously affected.
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25MC 185.75MC	8			
			177MC (10MC Swp)	175.25MC 179.75MC	7			

LOW BAND OSCILLATOR ALIGNMENT

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
13.	Fig. 6.	Thru Fig. 6 to VHF antenna terminals.	85MC (10MC Swp)	83.25MC	6	Vert. Amp. thru 10KΩ to point (A). Low side to chassis top plate	A16	Adjust to place video marker at 50% on low frequency side of response curve as in Fig. 8.
14.	"	"	69MC (10MC Swp)	67.25MC	4	"		Video marker should fall at 50% on response curve as in Fig. 8.
15.	"	"	57MC (10MC Swp)	55.25MC	2	"		"

HIGH BAND OSCILLATOR ALIGNMENT

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
16.	Fig. 6	Thru Fig. 6 to VHF antenna terminals	213MC (10MC Swp)	211.25MC	13	Vert. Amp. thru 10KΩ to point (A). Low side to chassis top plate.	A15	Adjust to place video marker at 50% on low frequency side of response curve as in Fig. 8.
17.	"	"	195MC (10MC Swp)	193.25MC	10	"		Video marker should fall at 50% response curve as in Fig. 8.
18.	"	"	177MC (10MC Swp)	175.25MC	7	"		"

UHF TUNER ALIGNMENT

Complete UHF tuner alignment is not recommended in the field. See step 19 for alignment of the pre-IF amplifier.
If necessary, the RF cavities may be adjusted for peak performance. First note position of ribbons and mark the UHF drive gear to aid in relocating the original positions of the ribbons if necessary. Loosen the pully positioning screw(Fig. 9) and turn the pulleys for clearest picture and best sound. Tighten pully positioning screw after satisfactory adjustments have been made.
CAUTION: Do not disturb setting of tracking screws, oscillator trimmer screw or oscillator cavity. Precision test equipment is required for these adjustments.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
19.	1MMF	High side to point (F). Low side to tuner chassis.	25MC (Unmod)	Any UHF channel	DC probe to point (A). Common to chassis top plate.	A25, A26	Adjust for maximum deflection.

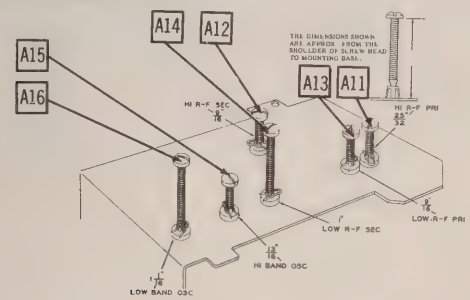


FIG.5

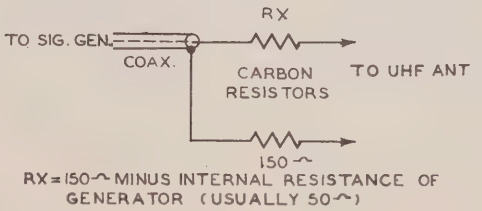


FIG.6

FIG.7

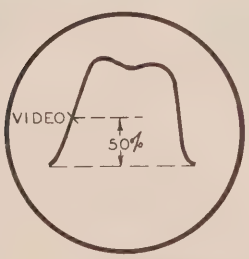


FIG.8

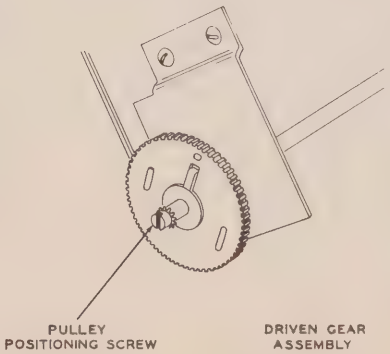


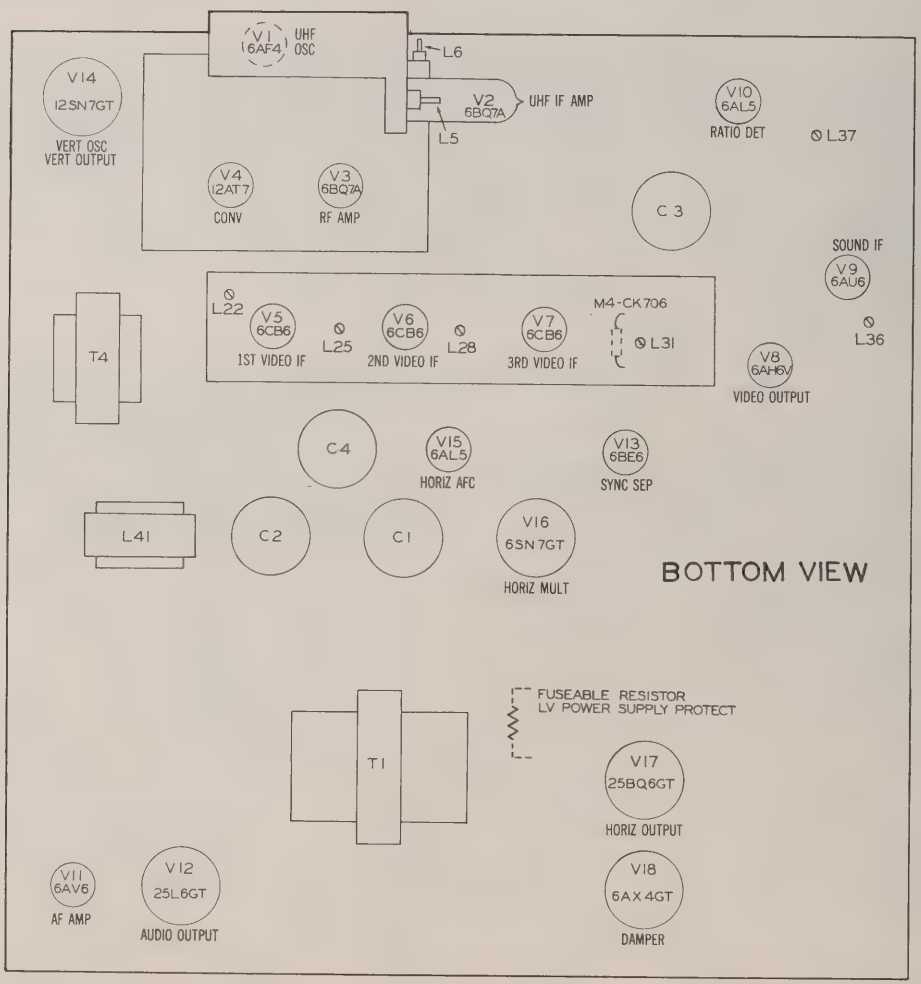
FIG.9

TRUETONE MODELS 2D1415A, 2D1416A, 2D1426A, 2D2313C, 2D2414A, 2D2415A, 2D2422A, B (Ch. 17T4, 17T5, 17T8, 21T14, A, 21T16, A)

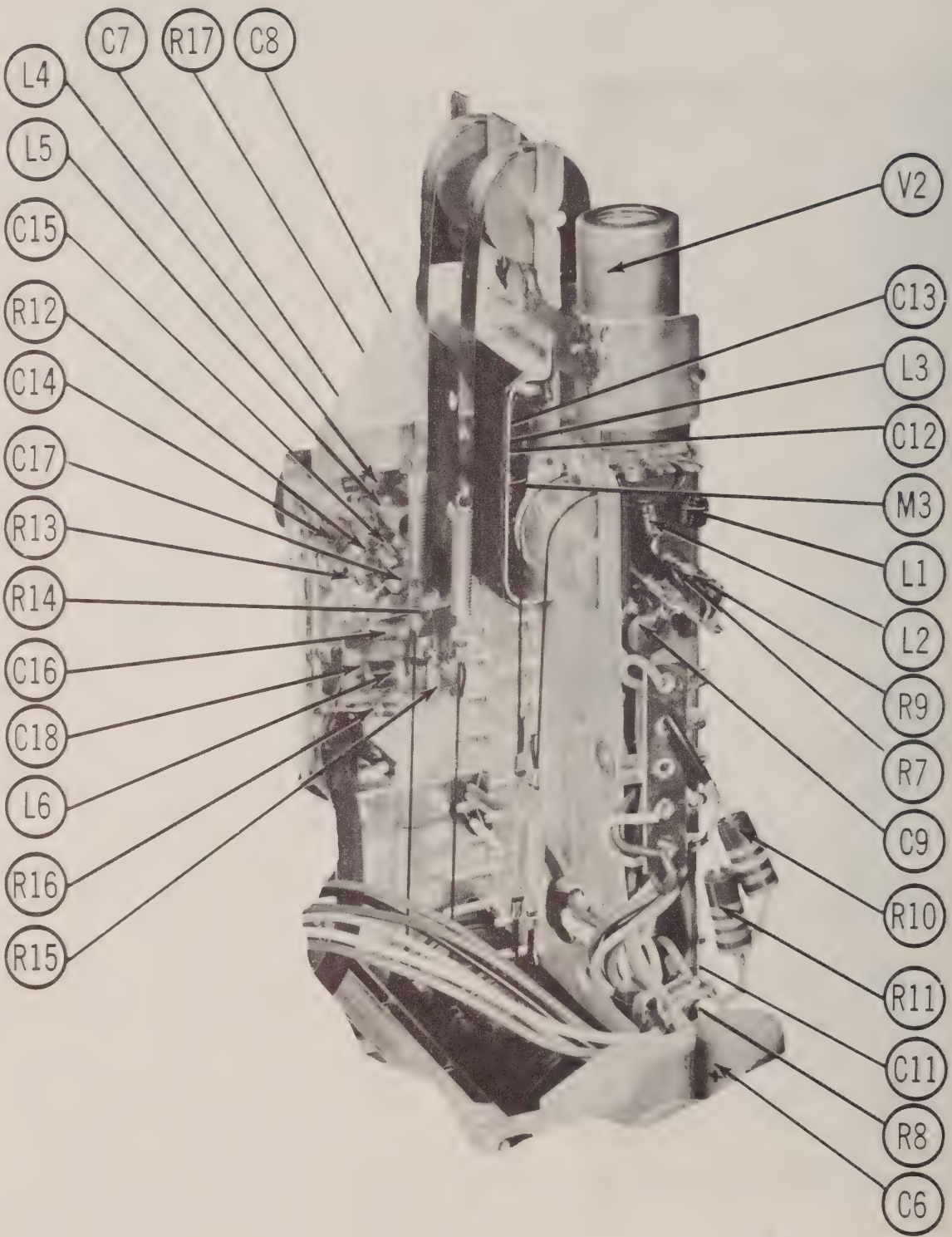
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AF4	†■11.2KΩ	4.7KΩ	.1Ω	0Ω	0Ω	4.7KΩ	†■11.2KΩ		
V 2	6BQ7A	INF	1Meg	0Ω	.1Ω	0Ω	†■1.6KΩ	INF	INF	0Ω
V 3	6BQ7A	INF	1Meg	0Ω	0Ω	.1Ω	†1.1KΩ	INF	INF	0Ω
V 4	12AT7	†170Ω	12.2KΩ	2.2KΩ	0Ω	0Ω	†27KΩ	242KΩ	0Ω	.1Ω
V 5	6CB6	1.1Meg	47Ω	0Ω	.1Ω	†2.6KΩ	†2.6KΩ	0Ω		
V 6	6CB6	1.1Meg	47Ω	0Ω	.1Ω	†2.6KΩ	†2.6KΩ	0Ω		
V 7	6CB6	2Ω	82Ω	0Ω	.1Ω	†2.6KΩ	†2.6KΩ	0Ω		
V 8	6AH6	470KΩ	2.5KΩ	.1Ω	0Ω	†5.7KΩ	†27KΩ	2.5KΩ		
V 9	6AU6	100KΩ	0Ω	.1Ω	0Ω	†8.3KΩ	†8.3KΩ	120Ω		
V 10	6AL5	22KΩ	0Ω	.1Ω	0Ω	INF	0Ω	INF		
V 11	6AV6	10Meg	0Ω	0Ω	.1Ω	0Ω	0Ω	†222KΩ		
V 12	25L6GT	INF	35Ω	†2.4KΩ	†2.2KΩ	470KΩ	†71Ω	21Ω	120Ω	
V 13	6BE6	50KΩ	0Ω	0Ω	.1Ω	60KΩ	†22KΩ	1Meg		
V 14	12SN7GT	700KΩ	▲1.1Meg	8.2KΩ	1Meg	▲1.1KΩ	2KΩ	10Ω	4Ω	
V 15	6AL5	2.2Meg	150KΩ	.1Ω	0Ω	2.2Meg	0Ω	4.5Meg		
V 16	6SN7GT	150KΩ	†100KΩ	820Ω	5.1Meg	†5.6KΩ	820Ω	.1Ω	0Ω	
V 17	25BQ6GT	INF	10Ω	INF	8.3KΩ	470KΩ	INF	21Ω	0Ω	TOP CAP ▲11.5Ω
V 18	6AX4GT	INF	▲2Ω	300KΩ	INF	†73Ω	†71Ω	.1Ω	0Ω	
V 19	1X2A	PINS		1 - 8	HAVE	INF	RESISTANCE			TOP CAP ▲195Ω
V 20	17HP4	0Ω	3.3KΩ	PIN 6 †71Ω	PIN 10 ▲1KΩ	PIN 11 †200KΩ	PIN 12 .1Ω			

■ MEASURED IN UHF POSITION
† MEASURED FROM OUTPUT OF M1
▲ MEASURED FROM PIN 3 OF V18

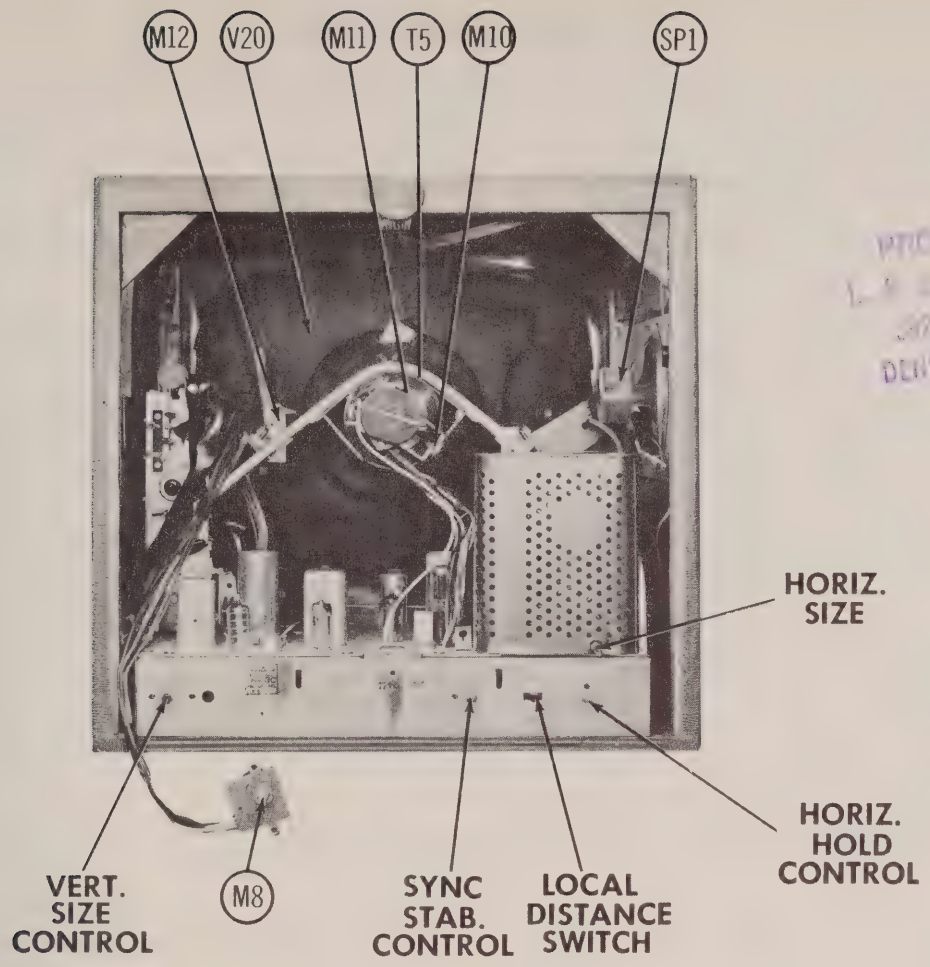


TUBE PLACEMENT CHART


C7
R17
C8
L4
L5
C15
R12
C14
C17
R13
R14
C16
C18
L6
R16
R15
V2
C13
L3
C12
M3
L1
L2
R9
R7
C9
R10
R11
C11
R8
C6

UHF TUNER

PROPERTY OF
DENVER, COLORADO



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Turn the picture control to its normal operating position.

Turn the horizontal oscillator slug (B1) thumb screw fully clockwise, then turn thumb screw two full turns counter clockwise. This places the thumb screw, which is a vernier adjustment, in the center of its range.

Now, turn the oscillator slug (B1) to the center of its effective sync range.

After B1 has been properly adjusted the thumb screw should be used as a vernier adjustment when slight synchronizing is necessary.

Adjust the horizontal size control for a picture slightly wider than necessary to fill the picture mask horizontally.

The horizontal linearity magnet affects the right side of the picture only.

It should be adjusted so that the picture is symmetrical from left to right.

TROUBLE SHOOTING AIDS

SWEEP

HORIZONTAL

LOSS OF SWEEP

Follow procedure outlined under "Loss of High Voltage".

INSUFFICIENT SWEEP

Check by substitution V17 and V18. Check M1 and M2. Adjust Horiz. Size. Check waveform W13.

If Satisfactory	If Unsatisfactory
Check T3, T5A, R97, C98 and other associated components.	Check R96, C94, C96, C95 and other associated components.

DRIVE LINES

Check by substitution V17 and V18. Check T3, T5A, C100, C95, C96, R96 and other associated components.

COMPRESSED LEFT SIDE

Check horizontal size adjustment. Check by substitution V17 and V18. Check components associated with the horizontal output and damper stages especially T3 and T5A.

FOLDS

Follow procedure outlined under "Drive Lines".

PIE CRUST EFFECT

Check by substitution V16, V17 and V18. Check C91 for open. Check T3 and T5A for internal arcing .

XMAS TREE EFFECT

Check by substitution V16, V17 and V18. Check T3, T5A, C94, C92, L38 and other associated components.

VERTICAL

LOSS OF SWEEP

Substitute V14. Check T2, T4, T5B, C83, C82, C78, R77, R78, R4 and other associated components.

INSUFFICIENT SWEEP

Check height and vertical linearity controls for proper adjustment. Proceed as outlined under "Loss of Sweep".

COMPRESSED AT BOTTOM

Substitute V14. Check R4, C81, C77 and other associated components.

COMPRESSED AT TOP

Substitute V14. Check C3C, R6, R76 and other associated components.

FOLDS

Substitute V14. Check associated components for failure or change of value.

SYNC

LOSS OF VERTICAL AND HORIZONTAL SYNC

Substitute V13. Check C74, C75, M9, R68, R45, R71, R5, R70 and other associated components.

LOSS OF VERTICAL SYNC-HORIZONTAL SYNC SATISFACTORY

Substitute V14. Check T2, C77, C76, C78, R72, R3, R73 and other associated components.

LOSS OF HORIZONTAL SYNC-VERTICAL SYNC SATISFACTORY

Check by substitution V15 and V16. Check waveform W11.

If Satisfactory	If Unsatisfactory
Check C89, C93, R87, R88, R90, L38 and other associated components.	Check C87, C84, R69, R70, C86 and other associated components.

HORIZONTAL BENDING

Check by substitution V13, V15 and V16. Check horizontal AFC filter network for component failure or change of value.

VIDEO

LOSS OF VIDEO

Substitute V8. Check components associated with V8. Check picture tube.

SOUND BARS (4.5MC Beat)

Adjust tuner fine tuning for best sound and picture. Check video IF alignment.

POOR CONTRAST

Substitute V8. Check video detector stage. Check contrast control, picture tube and other associated components.

NEGATIVE PICTURE

Check by substitution V3, V5, V6, V7 and V8. Check AGC network. Check picture tube.

SMEAR

Substitute V8. Check L32, L33, L34, L35, picture tube and other associated components.

WIDE BLACK BAR ACROSS PICTURE

Check by substitution V3, V5, V6, V7 and V8 for heater to cathode leakage.

AUDIO

WEAK OR NO SOUND

Check by substitution V9, V10, V11 and V12. Check stages V11 and V12 using audio signal generator. Apply audio signal at point Ⓒ.

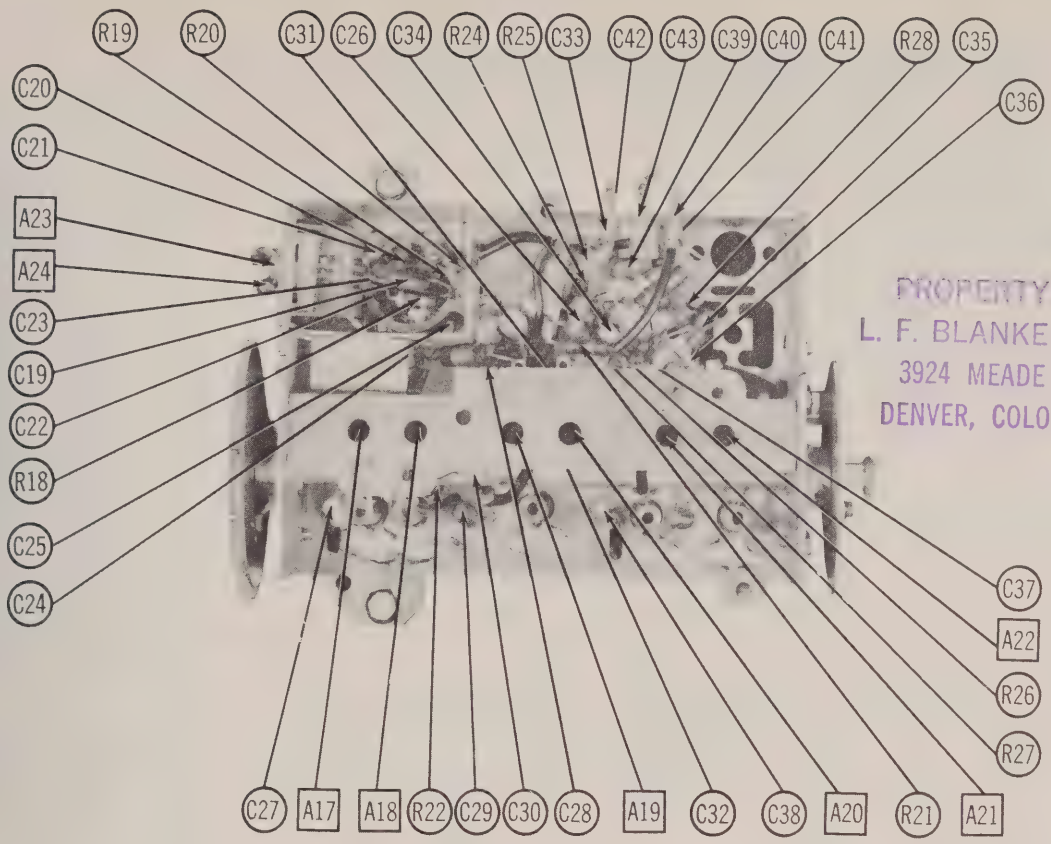
If Satisfactory	If Unsatisfactory
Check ratio detector and audio IF alignment. and components.	Check C70, C71, C72, C73, C4B, R61, R58, R1, T6, speaker and other associated components.

BUZZ

Adjust tuner fine tuning for best sound and picture. Adjust A10 for minimum buzz. If still unsatisfactory substitute V10 and realign audio IF and ratio detector stages.

DISTORTED

Follow procedure outlined under "Weak or No Sound".



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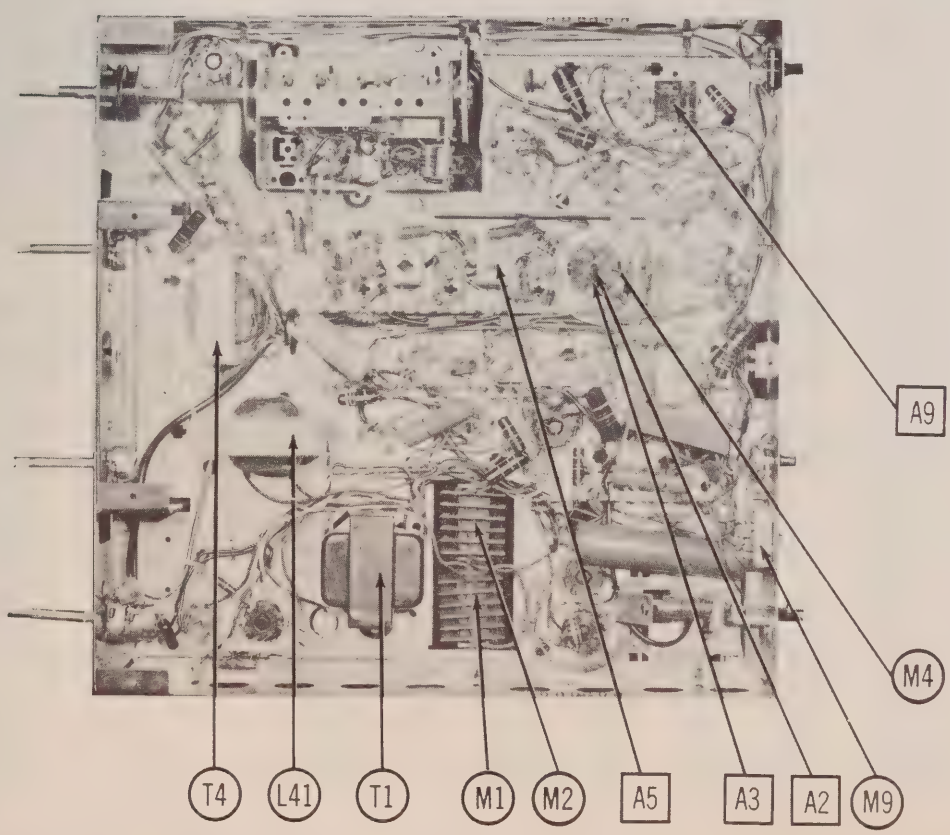
3924 MEADE ST.
DENVER, COLORADO

VHF TUNER-BOTTOM VIEW



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION

PROPERTY OF
L. F. BLANKENSHIP
3324 MEADE ST.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: TRUETONE Part No.	STANDARD REPLACEMENT TYPE	RETMA BASE TYPE	NOTES
V1	UHF Oscillator	5AF4	6AF4	7DH	
V2	UHF IF Amplifier	6DQ7A	6HQ7A	9AJ	
V3	RF Amplifier	6DQ7A	6HQ7A	9AJ	
V4	Converter	12AT7	12AT7	9A	
V5	1st Video IF Amp.	6CB6	6CB6	7CM	
V6	2nd Video IF Amp.	6CB6	6CB6	7CM	
V7	3rd Video IF Amp.	6CB6	6CB6	7CM	
V8	Video Output	6AH6	6AH6	7BK	
V9	Sound IF Amp.	6AU6	6AU6	7BK	
V10	Ratio Detector	6AL5	6AL5	6BT	
V11	A F Amplifier	6AV6	6AV6	7BT	
V12	Audio Output	25L6GT	25L6GT	7G	
V13	Sync Separator	6BE6	6BE6	7CH	
V14	Vert. Oscillator; Vert. Output	12SN7GT	12SN7GT	8BD	
V15	Horiz. A F C	6AL5	6AL5	6BT	
V16	Horiz. Mult.	6SN7GT	6SN7GT	8BD	
V17	Horiz. Output	25BQ6GT	25BQ6GT	6AM	
V18	Damper	6AX4GT	6AX4GT	6CG	
V19	HV Rectifier	1X2A	1X2A	9Y	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: TRUETONE Part No.	CBS HYTRON Part No.	GENERAL ELECTRIC Part No.	SYLVANIA Part No.	WESTINGHOUSE Part No.	RETMA BASE TYPE	NOTES
V20	17HP4	17HP4	17HP4/17RP4	17HP4 17RP4	17HP4	12L	① Circuit changes necessary
	21FP4A	21FP4A	21FP4A	21FP4A 21FP4A ① 21FP4C	21FP4A	12L 12M 12L	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP	RATING: VOLT	REPLACEMENT DATA: TRUETONE Part No.	AEROVOX Part No.	CENTRALAB Part No.	CORNELL-DUBILIER Part No.	ERIE Part No.	MALLORY Part No.	SPRAGUE Part No.	NOTES
C1	100	150	8C-22286	XA003		FP518		TV4	TVL-1423	
C2	100	150	8C-22286	XA003		FP518		TV4-1423	TVL-1423	
C3A	⌀100	300	8C-22130	AFH-UD		D158		FP418.2	TVL-4638	
B	⌀10	450		PRS25/100				TC72		
C	100	25								
D	⌀10	75								
C4A	⌀10	300	8C-20964	AFH3-124		C021		FP330.5	TVL-3580	
B	⌀10	300								
C	10	15								
C5	50	350	8C-22111	PRS450/50		BR5035		TC58	TVA-1713	
C6	8	450	8C-23453	PRS450/8		BR845		TC71	TVA-1704	
C7	100		8G-19682	SI100	D8-101	TP34	GP1K-101	UC-521	5CA-T1	
C8	100		8G-19682	SI100	D8-101	TP34	GP1K-101	UC-521	5CA-T1	
C9	1000		8G-19683	SIDP-3X001	DD3-102	DH069	812-001	DC-521	5HK-3D1	
C10	1000									
C11	1000		8G-20878	EF-001	MFT-1000				503C-D1	
C12	30		8G-21315							
C13	20		8G-21951							
C14A	1000		8G-19500	SPD-3X001	DD3-102	DH069	812-001	DC0-521	5HK-3D1	
B	1000									
C15	47		8G-20740	BPD-000047	DS-470	GS23	801-470	UC-5447	5CA-Q47	
C16	1000		8G-13201	SI1D00	D6-102	TP52	GP2L-102	UC-521	5HK-D1	
C17	1000		8G-13201	SI1D00	D6-102	TP52	GP2L-102	UC-521	5HK-D1	
C18	1000		8G-13201	SI1D00	D6-102	TP52	GP2L-102	UC-521	5HK-D1	
C19	22		8G-11892	SI22N750	TCN-22	TM06	N750K-220	NT-5422	5TCU-Q22	
C20	5000		8G-23812	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C21	220		8G-19045	SI220	TC2-22	TP39	GP2K-221	UC-5322	5CA-T22	
C22	2.2		8G-19495-4	SI2.2NP0	TC2-2.2	TP26	NP0K-2R2			
C23	8		8G-20880							
C24	1000		8G-21747	BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C25	1000		8G-13201	SI1000	D6-102	TP52	GP2L-102	UC-521	5HK-D1	
C26	1000		8G-13201	SI1D00	D6-102	TP52	GP2L-102	UC-521	5HK-D1	
C27	15		8G-13017	SI15NP0	TC2-15	TZ11	NP0K-150	ZT-5415	5TCC-Q15	
C28	1		8G-19495-2	SI1NP0	TC2-1	TZ03	NP0K-010		5TCCB-V1	
C29	1000		8G-13201	SI1D00	D6-102	TP52	GP2L-102	UC-521	5HK-D1	
C30	1		8G-19495-2	SI1NP0	TC2-1	TZ03	NP0K-010		5TCCB-V1	
C31	4		8G-19504		TC2-4		NP0K-040			
C32	1000		8G-13201	SI1000	D6-102	TP52	GP2L-102	UC-521	5HK-D1	
C33	1000		8G-20878	EF-001	MFT-1000				503C-D1	
C34	1		8G-19495-2	SI1NP0	TC2-1	TZ03	NP0K-010		5TCCB-V1	
C35	1000		8G-13201	SI1D00	D6-102	TP52	GP2L-102	UC-521	5HK-D1	
C36	2.2		8G-19568							
C37	51		8G-11891		TCN-51	TM15	N750K-510			
C38	7		8G-15224				N750K-070			
C39	1000		8G-13201	SI1000	D6-102		GP2L-102	UC-521	5HK-D1	
C40	1000		8G-20878	EF-001	MFT-1000				503C-D1	
C41	1000		8G-20878	EF-001	MFT-1000				503C-D1	
C42	1000		8G-20878	EF-001	MFT-1000				503C-D1	
C43	8		8G-20879							
C44	5000		8G-13982	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C45	5000		8G-13982	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C46	10		8G-11789	SI10NP0	TC2-10	TZ09	NP0K-100	ZT-5410	5TCC-Q	
C47	100	500	8F3-8	1468-0001	D8-101	5W5T1	GP1K-101	MC235	1FM-31	
C48	1000		8G-13201	SI1000	D6-102	TP52	GP2L-102	UC-521	5HK-D1	
C49	1000		8G-19522	SI2000	D6-202	TP56	GP2-333-202	UC-532	5HK-D2	
C50	1000		8G-13201	SI1000	D6-102	TP52	GP2L-102	UC-521	5HK-D1	
C51	1000		8G-13201	SI1000	D6-102	TP52	GP2L-102	UC-521	5HK-D1	
C52	680		8G-21105	SI680	D6-681	TP50	GP2K-681	UC-5388	5CA-T68	
C53	1000		8G-13201	SI1000	D6-102	TP52	GP2L-102	UC-521	5HK-D1	
C54	1000		8G-13982	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C55	5000		8G-13982	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C56	1000		8G-13201	SI1000	D6-102	TP52	GP2L-102	UC-521	5HK-D1	
C57	5		8G-13186	SI5NP0	TC2-4.7	TZ07	NP0K-050	ZT-556	5TCCB-V47	

CAPACITORS (cont)

ITEM No.	RATING: CAP	RATING: VOLT	REPLACEMENT DATA: TRUETONE Part No.	AEROVOX Part No.	CENTRALAB Part No.	CORNELL-DUBILIER Part No.	ERIE Part No.	MALLORY Part No.	SPRAGUE Part No.	NOTES
C58	.22	200	8J-16082	P288-22		CUBAP23		PT4022	2TM-P22	
C59	.1	200	8J-16085	P288-1	DF-104	CUBAP1		PT401	2TM-P1	
C60	5000		8G-13982	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C61	.1	400	8J-16083	P488-1	DF-104	CUBAP1		PT401	4TM-P1	
C62	5		8G-12168	SI5NP0	TCZ-4.7	TZ07	NP0K-050	ZT-556	5TCCB-V47	
C63	22		8G-13902	SI22N90	TCZ-22	TZ14	NP0K-220	ZT-5422	5TCC-Q22	
C64	47		8G-12198	SI47NT50	TCN-47	TN14	N750K-470	NT-5447	5TCU-Q47	
C65	.0022	400	8J-20634	P488-0022	DE-122	CUBAD22	GP3-333-322	PT4322	4TM-D22	
C66	5000		8G-13982	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C67	5000		8G-13982	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C68	560	500	8F3-123			SR5756				
C69	5000		8G-23123	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C70	.01	400	8J-16084	P488-01	D8-103	CUBA81	GP2-333-103	PT401	4TM-S1	
C71	.01	400	8J-16084	P488-01	D8-103	CUBA81	GP2-333-103	PT401	4TM-S1	
C72	.01	400	8J-16084	P488-01	D8-103	CUBA81	GP2-333-103	PT401	4TM-S1	
C73	.015	400	8J-20534	P488-015		CUBS15		PT415	4TM-S15	
C74	.0022	400	8J-20590	P488-0022	D8-222	CUBD22	GP3-333-222	PT4222	4TM-D22	
C75	.1	400	8J-16083	P488-1	DF-104	CUBAP1		PT401	4TM-P1	
C76	.0047	400	8J-20592	P488-0047	D8-473	CUBD47	GP3-333-472	PT4247	4TM-D47	
C77	.022	200	8J-16086	P488-022	DF-203	CUBA822	41T-03	PT4122	4TM-S22	
C78	.047	200	8J-16096	P288-047	DF-503	CUBA547		PT4147	2TM-S47	
C79	.047	400	8J-16081	P488-047	DF-503	CUBA547		PT4147	4TM-S47	
C80	.047	200	8J-16096	P288-047	DF-503	CUBA547		PT4147	2TM-S47	
C81	.01	400	8J-16084	P488-01	D8-103	CUBA81	GP2-333-103	PT401	4TM-S1	
C82	.47	400	8J-21505	484-5		CUBAP5		PT4047	4TM-P5	
C83	.01	600	8J-16097	P868-01	D8-103	CUBA81	GP2-333-103	PT501	6TM-S1	
C84	100	500	8F3-113	1469-0001		2SR5T22		MC2235	MS-31	
C85	220	500	8F3-117	1469-00025		2SR5T22		MC2240		
C86	220	500	8F3-123	1475-0007		SR5T68			MS-37	
C87	680	500	8F3-123	1475-0007		SR5T68			MS-37	
C88	220	500	8F3-117	1469-00025		2SR5T22		MC2240		
C89	.01	400	8J-16084	P488-01	D8-103	CUBA81	GP2-333-103	PT401	4TM-S1	
C90	.22	200	8J-16082	P288-22		CUB22P22		PT4022	2TM-P22	
C91	.047	200	8J-16096	P288-047	DF-503	CUBA547		PT4147	2TM-S47	
C92	.0039	500	8J-22813	1464-004		1R5D39		MC2432	MS-34	
C93	220	500	8F3-117	1469-00025		2SR5T22		MC2240		
C94	330	500	8F3-119	1469-00035		5R5T33				
C95	500	500	8F3-123			SR5T56				
C96	.01	400	8J-16084	P488-01	D8-103	CUBA81	GP2-333-103	PT401	4TM-S1	
C97	47		8G-11198	SI47NT50	TCN-47	TN14	N750K-470	NT-5447	5TCU-Q47	
C98	.047	400	8J-16081	P488-047	DF-503	CUBA547		PT4147	4TM-S47	
C99	10000		8G-20589	BPD-01	DD-103	K062	811-01	DC-537	5HK-E1	
C100	470	1000	8G-21460	HVD15-00047		VT47	1R5KV-471	MC4347	5KA-T47	
C101	.22	200	8J-16082	P288-22		CUBAP22		PT4022	2TM-P22	
C102	47		8G-11198	SI47NT50	TCN-47	TN14	N750K-470	NT-5447	5TCU-Q47	
C103	.47	400	8J-21505	484-5		CUBAP5		PT4047	4TM-P5	
C104	.1	400	8J-16083	P488-1	DF-104	CUBAP1		PT401	4TM-P1	

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRUETONE Part No.	IRC Part No.	CLAROSTAT Part No.	CENTRALAB Part No.	MALLORY Part No.	INSTALLATION NOTES
R1A	250000	1	A10A-22316		RTV-447	U2252R UR16A UB-25	† † †	Picture-Panel Volume-Rear Attach to RIB
B	1 Meg	1				U-61		Brightness
C	Switch					Not Req.		Attach to R2A
R2A	100K Ω	1	A10B-22374	QU1-128	A47-100K-S	AB-40		Vert. Hold
B	Shaft		Not Req.	Not Req.	K88-3	AK-4		Attach to R3A
R3A	500K Ω	1	A10B-22375	QU-133	A47-500K-S	AB-50		Vert. Size
B	Shaft		Not Req.	Not Req.	K88-3	AK-4		Attach to R4A
R4A	750K Ω	1	A10B-19220	QU1-136	A47-1Meg-S	AB-69		Vert. Size
B	Shaft		Not Req.	Not Req.	FK8-1/4	AK-1		Attach to R4A
R5A	500K Ω	1	A10B-20556	QU1-133	A47-500K-S	AB-50		Sync Stabilizer
B	Shaft		Not Req.	Not Req.	FK8-1/4	AK-1		Attach to R5A
R6	4000 Ω with 1000Ω tap	1	10B-21052		39-4000			Vert. Linearity - Note - wire wound

Note - Connect a 1000Ω resistor in series with the control and the lead connecting to the same terminal.
† Universal replacement (Mallory exact duplicate Part No. UE336S)

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: TRUETONE Part No.	IRC Part No.	NOTES
R7	4700Ω	1		BTS-4700	
R8	180Ω	1		BTS-180	
R9	22Ω	1		BTS-22	
R10	22KΩ	2		BTB-22K	
R11	22KΩ	1		BTS-22K	
R12	27KΩ	1		BTS-27K	
R13	22Ω	1		BTS-22	
R14	10KΩ	1		BTS-10K	
R15	3900Ω	1		BTS-3900	
R16	1500Ω	1		BTS-1500	
R17	680KΩ	1		BTS-680K	
R18	470KΩ	1		BTS-470K	
R19	1000Ω	1		BTS-1000	
R20	10KΩ	1		BTS-10K	
R21	1000Ω	1		BTS-1000	
R22	10Ω	1		BTS-10	
R23	1000Ω	1		BTS-1000	
R24	22KΩ	1		BTS-22K	
R25	220KΩ	1		BTS-220K	
R26	10KΩ	1		BTS-10K	
R27	2200Ω	1		BTS-2200	
R28	100Ω	1		BTS-100	
R29	37½Ω	1	9B2-79	BTA-37K	
R30	8200Ω	1	9B1-73	BTS-8200	
R31	47KΩ	1	9B1-83	BTS-47K	
R32	47KΩ	1	9B1-83	BTS-47K	
R33	47Ω	1	9B1-46	BTS-47	
R34	1000Ω	1	9B1-13	BTS-1000	
R35	47KΩ	1	9B1-83	BTS-47K	
R36	47Ω	1	9B1-46	BTS-47	
R37	1000Ω	1	9B1-13	BTS-1000	
R38	82Ω	1	9B1-49	BTS-82	
R39	1000Ω	1	9B1-13	BTS-1000	
R40	22KΩ	1	9B1-78	BTS-22K	
R41	5600Ω	1	9B1-71	BTS-5600	
R42	470KΩ	1	9B1-94	BTS-470K	
R43	27KΩ	1	9B2-79	BTA-27K	
R44	15KΩ	1	9B1-78	BTS-15K	
R45	5800Ω	1	9B1-71	BTS-5800	
R46	5600Ω	2	9B4-71		
R47	150KΩ	1	9B1-88	BTS-150K	
R48	3300Ω	1	9B1-68	BTS-3300	
R49	1000Ω	1	9B1-83	BTS-1000	
R50	1800Ω	1	9B1-85	BTS-1800	
R51	100KΩ	1	9B1-88	BTS-100K	
R52	120Ω	1	9B1-51	BTS-120	
R53	8200Ω	2	9B4-73	BTB-8200	
R54	47Ω	1	9B1-46	BTS-47	
R55	22KΩ	1	9B1-78	BTS-22K	
R56	22KΩ	1	9B1-78	BTS-22K	
R57	10 Meg 5%	1	9B1-110	BTS-10 Meg 5%	
R58	220KΩ	1	9B1-90	BTS-220K	
R59	470KΩ	1	9B1-94	BTS-470K	
R60	120Ω	1	9B2-51	BTA-120	
R61	2200Ω	5	9C12-1103		
R62	47KΩ	1	9B1-83	BTS-47K	
R63	1 Meg	1	9B1-98	BTS-1 Meg	
R64	10 Meg	1	9B1-110	BTS-10 Meg	
R65	10 Meg	1	9B1-110	BTS-10 Meg	
R66	470KΩ	1	9B1-94	BTS-470K	
R67	1 Meg	1	9B1-98	BTS-1 Meg	
R68	22KΩ	5	9C12-1115		
R69	33KΩ	1	9B1-80	BTS-33K	

RESISTORS (cont)

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: TRUETONE Part No.	IRC Part No.	NOTES
R70	33KΩ	1	9B1-80	BTS-33K	
R71	220KΩ	1	9B1-90	BTS-220K	
R72	100KΩ	1	9B1-88	BTS-100K	
R73	150KΩ	1	9B1-88	BTS-150K	
R74	820KΩ	1	9B1-73	BTS-820K	
R75	12KΩ	1	9B1-75	BTS-12K	
R76	1 Meg	1	9B1-98	BTS-1 Meg	
R77	150KΩ	1	9B1-88	BTA-150K	
R78	220KΩ	1	9B1-90	BTS-220K	
R79	220KΩ	1	9B1-90	BTS-220K	
R80	100KΩ	1	9B1-88	BTS-100K	
R81	1000Ω	1	9B1-83	BTS-1000	
R82	1000Ω	1	9B1-83	BTS-1000	
R83	2.2 Meg	1	9B1-103	BTS-2.2Meg	
R84	150KΩ	1	9B1-88	BTS-150K	
R85	2 Meg	1	9B1-103	BTS-2 Meg	
R86	150KΩ	1	9B1-88	BTS-150K	
R87	680KΩ	1	9B1-96	BTS-680K	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: TRUETONE Part No.	IRC Part No.	NOTES
R88	56KΩ	1	9B1-83	BTS-56K	
R89	820Ω	1	9B1-61	BTS-820	
R90	5600Ω	1	9B1-71	BTA-5600	
R91	150KΩ	1	9B1-88	BTS-150K	
R92	100KΩ	1	9B1-88	BTS-100K	
R93	680KΩ	1	9B1-96	BTS-680K	
R94	820KΩ	1	9B1-97	BTS-820K	
R95	470KΩ	1	9B1-94	BTS-470K	
R96	100Ω	1	9B1-50	BTS-100	
R97	8200Ω	2	9B4-73	BTB-8200	
R98	3.9Ω	2			
R99	175Ω	20	9M-21715		
R100	5.6Ω	5	49M-30681		
R101	470KΩ	1	9B1-94	BTS-470K	
R102	1500Ω	10	9M-20726		
R103	470KΩ	1	9B1-94	BTS-470K	Note
R104	5.6Ω	5			

Note- Not used in all models.

TRANSFORMER (FILAMENT)

ITEM No.	RATING: PRI.	RATING: SEC.	RATING: SEC. 2	REPLACEMENT DATA: TRUETONE Part No.	Stancor Part No	Merit Part No	Triad Part No	RCA TYPE No	Halldorson Part No.	Thordarson Part No.
T1	117VAC	6.3VAC ④ .44A	⑤ 6.1A	C12D-31160	P-3084 ①	P-2947 ①	F-181 ①			

① Drill one new mounting hole.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: TRUETONE Part No.	Stancor Part No	Merit Part No	Triad Part No	RCA TYPE No	Halldorson Part No.	Thordarson Part No.
T2	Vert. Osc. Trans.	12M-18241-3	A-8125	A-3003	A-97X	209T1 ①	B6703	24A87U
T3	Horiz. Output Trans.	20L-21025-1					FB412 *	
T4	Vert. Output Trans.	12C-20761-4	A-8141	A-3039	A-104X	236T1	21806	38854
T4A	Horiz. (8.3MH)	D3M-21120 ②	DY-8A ⑤	MDF-70 ⑤	Y-12 ⑤		DF801 ⑤	Y-5 ⑤
B	Vert. (45MH)	20L-21130 ③						
		20L-21564 ④						

① Drill one new mounting hole.
② Includes C102, R81 and R82.
③ Alternate yoke.
④ Deflection yoke used in all 21" models.
⑤ Use original yoke network.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

ORIGINAL TERMINAL CONNECTIONS	Stancor Replacement Connections	Merit Replacement Connections	Triad Replacement Connections	RCA Replacement Connections	Halldorson Replacement Connections	Thordarson Replacement Connections
4					4	
3					3	
1					1	
7					7	
8					8	
10					10	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	IMPEDANCE: SEC	REPLACEMENT DATA: TRUETONE Part No.	Stancor Part No	Merit Part No	Halldorson Part No.	Thordarson Part No.	NOTES
T6	2.3KΩ	3.15Ω	12C12115	A-3876	A-2926	S-1X	21U01	24S50

SPEAKER

ITEM No.	RATINGS: SIZE	RATINGS: FIELD	RATINGS: V. C. IMP.	REPLACEMENT DATA: TRUETONE Part No.	VIKING Part No.	QUAM Part No.	NOTES
SP1	5"	PM	3.15Ω	18A21218	524	5A07	① Used in models 2D-2414 and 2D-2415
	6"	PM	3.15Ω	18A21433 ①	624	6A1	② Used in models 2D-1415, 2D-1418,
	10"	PM	3.15Ω	18A21442 ②			2D-1435 and 2D-1426

COILS (RF-IF)

ITEM No.	USE	DC RES.: PRI.	DC RES.: SEC.	REPLACEMENT DATA: TRUETONE Part No.	MEISSNER Part No.	MERIT Part No.	MILLER Part No.	NOTES
L1	Fil. Choke	0Ω		18A-20469				
L2	Cathode Choke	0Ω		18A-20470				
L3	UHF IF Coupling	.8Ω		18A-21934				
L4	RF Choke	2.4Ω		20L-30265				
L5	UHF IF Input Coil	.6Ω		20L-21933				
L6	UHF IF Output Coil	.8Ω		20L-30483				
L7	VHF Ant. Transformer	00CT	0Ω	13E-21673				Low band
L8	VHF Ant. Transformer	00CT	0Ω	13K-23083				High band
L9	Fil. Choke	.1Ω		18A-17937	19-3001	TV-189	6175	3 Microhenries
L10	Neutr. Coil	0Ω		13M-20781				

TRUETONE MODELS 2D1415A, 2D1416A, 2D1426A, 2D2313C, 2D2414A, 2D2415A, 2D2422A, B (Ch. 17T4, 17T5, 17T8, 21T16, A, 21T16, A)

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (cont)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA TRUETONE PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L11	Neutr. Coil	0Ω		13M-20780				
L12	VHF RF Coil	0Ω		13E-17140				High band
L13	VHF RF Coil	0Ω		13E-12046				Low band
L14	RF Choke	.7Ω		16A-17128				
L15	VHF Mixer Grid Coil	0Ω		13E-17140				High band
L16	VHF Mixer Grid Coil	0Ω		13E-12046				Low band
L17	Fil. Choke	0Ω		16A-20777				
L18	VHF Osc.Coil	0Ω		13E-17140				High band
L19	VHF Osc.Coil	0Ω		13D-12155				Low band
L20	IF Coupling	.2Ω		16A-21656	19-3001	TV-189	4602	1 Microhenry
L21	RF Choke	2Ω		201-15608	19-3036	TV-180	4626	20 Microhenries
L22	1st Video IF	.2Ω		201-20782	17-1003	TV-102 *	6188 *	
L23	Fil. Choke	.1Ω		16A-17937	19-3001	TV-189	6175	3 Microhenries
L24	RF Choke	1.8Ω		16A-18676	19-1002		4606	2.2 Microhenries; IRC Part # CLA
L25	2nd Video IF	.1Ω		201-21111				Includes 47 MMF capacitor
L26	Fil. Choke	.1Ω		16A-17937	19-3001	TV-189	6175	3 Microhenries
L27	RF Choke	1.8Ω		16A-18676	19-1002		4606	2.2 Microhenries; IRC Part # CLA
L28	3rd Video IF	.2Ω		201-21494				Includes resistor & capacitors
L29	RF Choke	2Ω		201-15608	19-3036	TV-180	4626	20 Microhenries
L30	RF Choke	2Ω		201-15608	19-3036	TV-180	4626	20 Microhenries
L31	4th Video IF	.3Ω	.4Ω	201-22004				Includes CK-706 crystal detector, 5MMF capacitor and series peaking coil
L32	Series Peak. Coil	2.6Ω		201-20265	19-3036	TV-180	6176	38 Microhenries
L33	Series Peak. Coil	7.5Ω		16A-20970	19-3250	TV-185	6181	270 Microhenries
L34	Shunt Peaking Coil	8.5Ω		16A-21391	19-3300		6155	305 Microhenries
L35	Shunt Peak. Coil	7.5Ω		16A-20970	19-3250	TV-185	6181	270 Microhenries
L36	Sound IF	1.5Ω		201-21398	17-3400	TV-151	1470	
L37	Ratio Det.	8.5Ω	.5ΩCT	13M-21644	17-3493 †	TV-115 †	6205 †	Tertiary winding=.3Ω
L38	Horiz. Osc.	80Ω		201-20291	19-1575	TV-163 *	6210 *	
L39	RF Choke	2Ω		201-15608	19-3036	TV-180	4626	20 Microhenries
L40	RF Choke	2Ω		201-15608	19-3036	TV-180	4626	20 Microhenries

* Enlarge mounting hole.
† Use adaptor plate.

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ∿)	REPLACEMENT DATA TRUETONE PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.
L41	.260A	71Ω	2.92 Hy.	16A21214	C-2334 ①	C-2991 ①	C-17X	C5030	

① Drill one new mounting hole.

SELENIUM RECTIFIER

ITEM No.	RATING CURRENT	REPLACEMENT DATA TRUETONE PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	SARKES TARZIAN PART No.	SELETRON PART No.	NOTES
M1	.260ADC	21J20097	1236A	RS300	6S300	300	6Q4	
M2	.260ADC	21J20097	1236A	RS300	6S300	300	6Q4	

MISCELLANEOUS

ITEM No.	PART NAME	TRUETONE PART No.	NOTES
M5	Dial Light	46A-10793	#47 Bayonet (Not used on all models)
M6	Tuner		VHF
M7	Tuner		UHF (not used on all models)
M8	Switch	201-21927	UHF/VHF with power cable (UHF models only)
M9	Switch	20B-21506	Local-Distance (AGC)
M10	Centering Magnet	16M-20697	
M11	Ion Trap	16M-19906	
M12	Correction Magnet	16M-21526	Horiz. Linearity Adj.
M13	Correction Magnet	16M-21499	Anti-pin cushion (21" CRT models)
	Cabinet	24D-22624	2D-1415A Model
	Cabinet	24D-22624	2D-1416A Model
	Cabinet	24D-22625	2D-1426A Model
	Cabinet	24D-22314	2D-2313C Model
	Cabinet	24D-22671	2D-2414A Model
	Cabinet	24D-22671	2D-2415A Model
	Cabinet	24D-22965	2D-2422A Model
	Cabinet	24D-23648	2D-2422B Model
	Knob	5B-22621	Volume
	Knob	5B-22620	Fine Tuning - 2D-2414A, 2415A, 2422A Models
	Knob	5B-22775	Fine Tuning - 2D-1415A, 1416A, 1426A Models
	Knob	5B-22618	Channel Selector - 2D-2414A, 2415A, 2422A Models
	Knob	5B-22776	Channel Selector - 2D-1415A, 1416A, 1426A Models
	Knob	5B-22619	Picture
	Knob	5B-22622	Brightness
	Knob	5B-19948-85	Fine Tuning
	Knob	5B-21026-85	Channel Selector Models 2D-2422B
	Knob	5B-19951-85	Picture 2D-2313C only
	Knob	5B-18164-85	Brightness & vert. hold
	Knob	5B-19950-85	Volume
	Knob	5B-15796-85	UHF/VHF switch - UHF models only
	Safety Glass	30M-22344	17" models
	Safety Glass	30M-22347	21" models

TROUBLE SHOOTING AIDS (cont)

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POWER

DEAD SET

If filament fail to light, check AC interlock assembly, check switch on volume control and T1. If V12, V14 and V17 fail to light, check R99 and these tubes, a series filament is associated with these tubes. If filaments light check R100 resistor type fuse. Check B+ filter and decoupling network components.

SMALL AND/OR DIM PICTURE

Check M1 and M2. Check B+ filter and decoupling network components.

HIGH VOLTAGE

LOSS OF HIGH VOLTAGE

Check by substitution V16, V17, V18 and V19. Check waveform W13.

If Satisfactory	If Unsatisfactory
Check T3, T5A, C100, C99, C5, C98, C101, R97 and other associated components.	Check C96, C94, C93, C92 , R92, R90, L38 and other associated components.

INSUFFICIENT HIGH VOLTAGE

Check by substitution V16, V17, V18 and V19. Check picture tube. Proceed as outlined under "Loss of High Voltage".

BLOOMING

Check by substitution V17 and V19. Check T3, T5A, R97 and other associated components.

GENERAL

RASTER - SOUND - NO PICTURE

Follow procedure outlined under "Loss of Video".

RASTER - PICTURE - NO SOUND

Follow procedure outlined under "Weak or No Sound"

RASTER - NO SOUND - NO PICTURE

Check by substitution V3, V4, V5, V6, V7 and V8. Check tuner, video and IF components.

NO RASTER - NO SOUND

Follow procedure outlined under "Dead Set".

KEYSTONE EFFECT

Check T5, C102, R81, R82.

INTERMITTENT STREAKS

Check high voltage section for corona discharge and arcing.

Symptoms shown are assumed and are not indicative of the quality and workmanship of this equipment.

UHF DRIVE CORD STRINGING

If for any reason the drive cord of either the RF or oscillator cavities need replacement, the exact cord and length are recommended. The cord used is of a special material which is not affected by temperature or moisture. Refer to the parts list for the correct replacement. The oscillator drive assembly consists of four (4) separate drive cords each locked to the oscillator drive pulley(Fig. 1) Each RF drive assembly consists of two (2) separate drive cords which are locked to the RF cavity drive pulley (Fig. 2) If the drive cord requires replacement, the picture tube should be removed along with the cavity cover. Follow the diagram and replace the cord as indicated. After replacement follow the instruction for realignment on page 7.

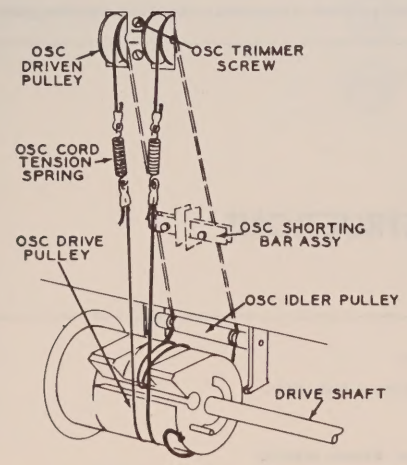


FIG.1

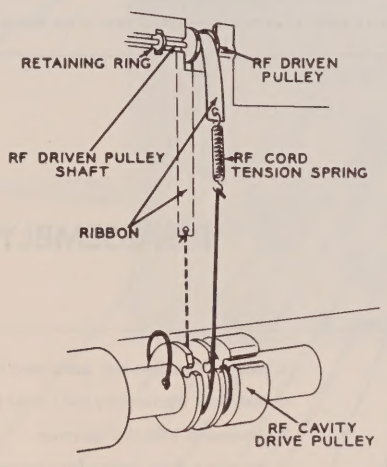


FIG.2

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

No field adjustment for the tuner oscillator circuit, for complete tuner alignment see alignment instructions on pages 6 and 7.

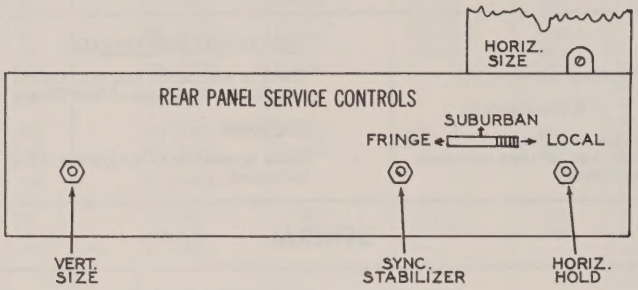
PICTURE TUBE SAFETY GLASS CLEANING

For picture tube safety glass cleaning, it is necessary to remove chassis. (See disassembly instructions).

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions).

SERVICE ADJUSTMENT LOCATION



HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Adjustment of the horizontal oscillator circuit can be made from rear panel of chassis. Adjust the horizontal hold slug (L38) until picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, adjust the ratio detector secondary (L37) located on top of chassis. (See tube placement chart).

FUSES

One fuse is used for LV power supply protection. (For location see tube placement chart).

CENTERING

Centering is accomplished mechanically by adjusting a magnetic ring around the neck of picture tube located flush against the yoke. Turn the disc-like knob and at the same time rotate the ring around the tube until picture is properly centered.

ANTI-PIN CUSHION ADJUSTMENT

Reduce the picture size so that the sides of the raster are visible, and position the magnets so that all sides are straight lines and the corners are at right angles. (This applies only to Models 2D1415A, 2D1416A, 2D1426A, 2D2414A, 2D2415A only).

BUILT-IN ANTENNA

Built-in antenna can be adjusted from rear of the cabinet. Adjust for a picture of maximum contrast and minimum ghosts.

DISASSEMBLY INSTRUCTIONS

1. Remove 6 push-on type knobs from front panel.
2. Remove 4 wood screws and 1 metal screw. Remove rear cover.
3. Disconnect VHF-UHF antennas.
4. Remove 4 metal screws from antenna brackets. Remove brackets.
5. Remove UHF-VHF selector knob and 2 bolts. Remove selector from rear cover.
6. Disconnect speaker, Remove 2 speaker nuts. Remove speaker.
7. Remove 6 chassis bolts. Remove chassis.

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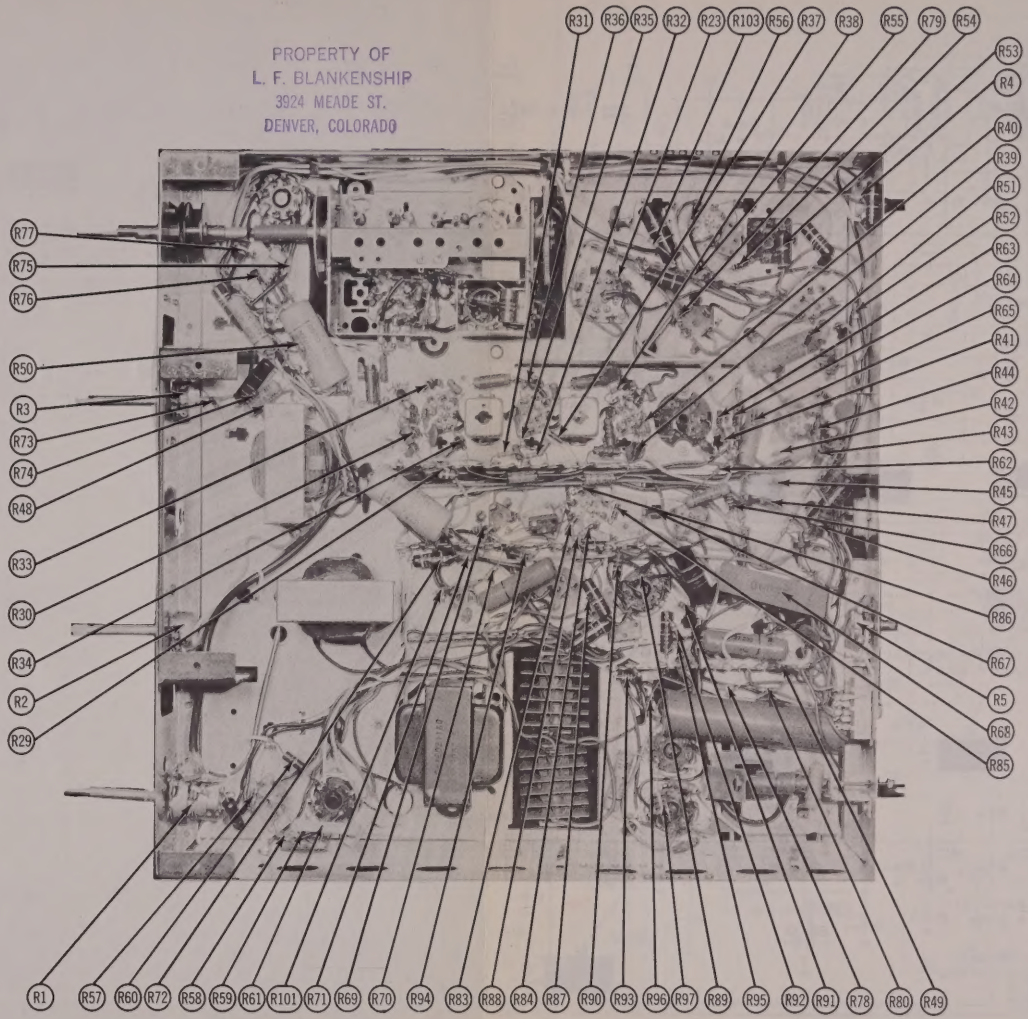

CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION